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Annexure B

Murray Bridge Technical College

B1-WGA – Traffic Impact Assessment

B2-WGA – Stormwater Management Concept

B3-Resonate – Planning Stage Acoustic Report

B4 – Lucid Consulting – Exhaust Discharge
memorandum

B5 – dSquared – Sustainability Strategy Report

Annexure B

28 August 2026

We acknowledge the Kaurna people as the Traditional Custodians of the land on which we work and pay respect to their Elders past, present and emerging.

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Annexure B1



Department for Infrastructure and Transport

Murray Bridge Technical College

PIP 1 TRAFFIC IMPACT ASSESSMENT

WGA260868

WGA260868-RP-TT-0003_E

11 September 2026



Revision History

REV	DATE	ISSUE	ORIGINATOR	CHECKER	APPROVER
A	29/07/2026	Initial PIP 1 Client Issue	JH	AK	HB
B	10/8/2026	DIT Comment Update/Revised Car Park	JH	AK	HB
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1 EXECUTIVE SUMMARY

WGA has prepared this Traffic Impact Assessment to support the PIP Part 1 *Concept Design Investigations* for the proposed Murray Bridge Technical College within the existing High School grounds adjacent Swanport Road.

The assessment has reviewed the proposed access arrangements, car parking provision, traffic generation, internal circulation, pedestrian and vehicle movements, and heavy vehicle servicing requirements to inform the ongoing development of the Technical College design.

The proposed Technical College is expected to accommodate up to 100 students on site at one time and approximately 25 staff, with operating hours generally between 7:00am and 6:00pm and potential after-hours use by students and adults.

WGA have undertaken morning peak period site reviews, and the existing traffic conditions on Swanport Road include notable activity associated with the Pedestrian Actuated Crossing (PAC).

Traffic impacts are expected to be manageable, noting the potential interaction between the proposed Technical College access, the existing PAC generated queues and also the part time bicycle lane.

Parking demand has been assessed against the SA Planning and Design Code (PDC) and Department for Education guidance. The PDC has a requirement for 28 staff and visitor spaces and 10 on street spaces for senior student parking within 300m of the Technical College. The student parks will be available, if not immediately adjacent to the College, further and safely along on Homburg Drive or Jarvis Avenue, where there is existing unrestricted on-street parking available.

The current concept provides 25 staff parks in a secured zone and five visitor parks which are not secured. These spaces include two DDA accessible spaces as part of the 30 total. This allocation of parking exceeds the PDC requirements.

The proposed access is via two separate cross overs (ingress and egress) on Swanport Road. These are considered suitable and generally comply with sight line requirements.

The proposed off-street parking layout has been reviewed against AS 2890.1 and is compliant for staff and visitor parking.

Turn path assessment within the car park proposal indicates that a waste collection vehicle (9.82m long) can generally negotiate the internal car park and loading area.

A 12.5m medium rigid vehicle has also been assessed as a check vehicle and can also generally negotiate the overall car park area. A Metropolitan Fire Services "Fire Pumper" is also able to access the hydrant to the east side of the proposed building. The largest delivery vehicle expected to access the site will need to be confirmed to assist with closing out our turn path review.

The operation of the part time (8:00am to 9:00am and 3:00pm to 4:00pm) bicycle lanes on Swanport Road, and that will prevent passenger drop off and pick up directly adjacent to the Technical College. Alternative locations for passenger drop offs are within the adjacent local network, with the provision of PAC to assist technical college students to cross Swanport Road.

Overall, the proposed Technical College can be accommodated from a traffic and access perspective.

2 INTRODUCTION

The Department of Infrastructure and Transport's (DIT) Project Implementation Process (PIP) requires concept phase assessment (Part 1) to accommodate a new Technical College proposed adjacent to the Murray Bridge High School (**MBHS**) at 162-194 Swanport Road, Murray Bridge.

WGA has already undertaken the PIP 0 "Pre Design Phase Assessment" Traffic Impact Assessment (TIA – refer report WGA260868-RE-TT-0001_A). Following the PIP 0 assessments, a concept design has been developed, and this report is the PIP 1 "Conceptual Design" TIA for the proposed Technical College.

2.1 Site Location

Murray Bridge is located 78km south-east of Adelaide CBD. The locality of the project is provided in Figure 2-1 showing the layout of the rural city of Murray Bridge and the position of the MBHS toward the southern end of the built-up areas.



Figure 2-1: Project Locality

The general road network surrounding the High School is provided in Figure 2-2. Swanport Road (represented by the yellow line) is an arterial road managed by DIT and the surrounding local road network is under the care and control of Rural City of Murray Bridge (Council).

The high school is bounded by predominantly residential properties. Toward the north and the Murray Bridge CBD, Swanport Road contains commercial development (becoming more concentrated north of the High School).

For the simplification of reference bearings, Swanport Road is assumed to run north-south and Long Island Road, Best Street and Jarvis Avenue run east-west.



Figure 2-2: Road Network Surrounding High School

2.2 Purpose of this Document

DIT has engaged WGA to provide a TIA for the Technical College, which is to be contained within the MBHS grounds.

Background investigations have included the following tasks:

- Conducting site reviews during the peak morning and afternoon drop-off and pick-up period.
- Assessment of the current traffic and parking conditions, including areas of congestion and any potential road safety concerns.
- Engage with DIT representatives.

The TIA is required to provide the following outputs, aligning with PIP Part 1 Concept Design Investigations, for submission with the Development Application:

- Review access locations and provide recommendations, including risks and opportunities, to assist in the development of the concept plans.
- Estimate on and off street parking demand in accordance with the SA Planning and Design Code (PDC).
- Estimate likely traffic generation from the development and determine directional flow of traffic to and from the site.
- Assess impacts of the additional traffic and on street parking demand.
- Develop a TIA detailing the assessment methodology, findings and recommendations for review by the project team.
- Review proposed off street parking layout for compliance with the Australian Standards and traffic movements.
- Undertake turn path assessment for heavy vehicle access, including waste and delivery vehicles
- Collaborate with the project team on access and parking layout and traffic-related matters.

2.3 Planning Timeframes

The siting for the Technical College is in its conceptual design (PIP Part 1 Investigations). This TIA will become a component of the Part 1 Investigations process. The proposed timeline for the completed investigations is as follows:

- The Office for Design and Architecture (ODASA) have engaged the Lead Professional Services Contractor (LPSC) taking over PIP Part 1 in June 2026.
- The State Commission Assessment Panel (SCAP) submission is due in early August.
- 100% documentation is due December 2026.
- Construction of the main building is proposed to commence in December 2026 with practical completion in December 2027.
- The school will be operational for the 2028 school year.

The LPSC is understood to be a consortium of Swanbury Penglase (Architecture and Interior Design) and BESIX Watpac (Planning, Building, Structural and Civil, Traffic, Landscape, Environmental).

2.4 Stakeholder Engagement

WGA is not required to undertake consultation as part of this TIA, with the exception of discussions with key DIT representatives.

Based upon the background provided, WGA understands that the following inter-government consultation has occurred to date:

- Department for Education
- Planning and Land Use Services
- Office for Design and Architecture
- Department for Housing and Urban Development
- Department for Infrastructure and Transport
- SA Water

3 EXISTING CONDITIONS

3.1 Land Use and Access

The development site is situated on the eastern side of Swanport Road, within the central southern area of Murray Bridge. Swanport Road is generally oriented north-south.

The surrounding land use is predominantly long-established residential properties interspersed with parks and other recreational facilities.

There is a small area just west of the MBHS (adjacent Homburg Drive and Swanport Road intersection) denoted as a Local Activity Centre. This is understood to be the OTR Convenience Store and adjoining Terry White Chemist/Clinic.

The MBHS is provided with four vehicular access points to the adjacent road network, as shown in Figure 3-1 and described below:

- Gate 1: located off Lohmann Street. Gate 1 is generally locked and does not connect to any car parking. It is assumed that Gate 1 is used for infrequent building access only (deliveries, waste collection etc.).
- Gate 2: two-way access located off Lohmann Street.
- Gate 3: two-way access located off Long Island Road serving staff and visitor car park.
- Gate 4: two-way access located off Long Island Road and servicing the existing “Lower Murray Trade Training Centre”.

The High School has a service vehicle access (with the gates typically locked) off Swanport Road approximately 150m southeast of the existing Pedestrian Actuated Crossing (PAC).

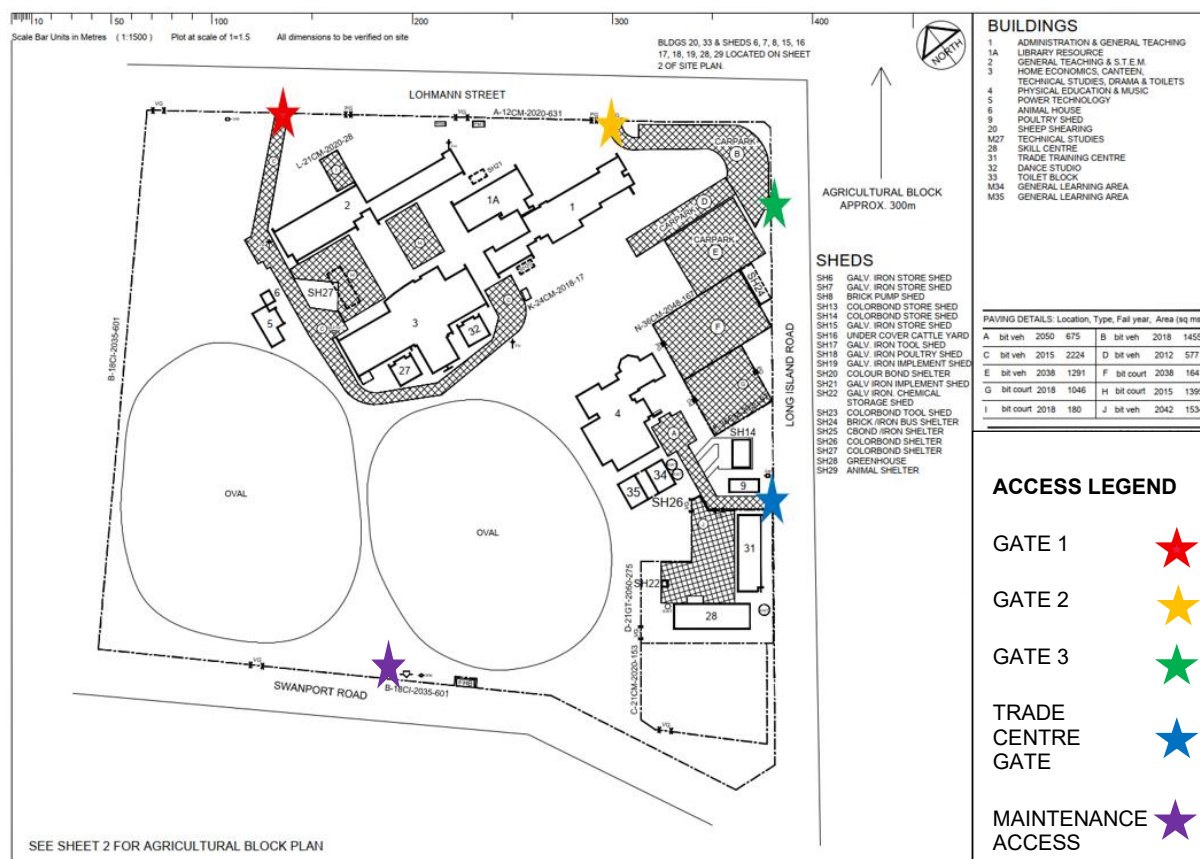


Figure 3-1: MBHS Existing Vehicular Access Points

3.2 Traffic Volumes

3.2.1 Arterial Network

Traffic volumes on Swanport Road have been obtained from a combination of Location SA Viewer and classification counts from DIT.

The daily traffic volumes along this section on Swanport Road at the Monash Terrace/Mulgundawah Road Intersection (800m north of the MBHS), are summarised below:

- Average Annual Daily Traffic = 10,200¹
- Commercial Vehicles Content = 3% of total traffic volumes
- Year of count = 2021

The traffic volumes on Swanport Road 800m south of the MBHS are summarised below:

- Average Annual Daily Traffic (AADT) = 6,100²
- Commercial Vehicles Content = 9% of total traffic volumes
- Morning Peak Hour 8:00am to 9:00am = 800 vehicles
- Afternoon Peak Hour 3:00pm to 4:00pm = 850 vehicles
- Year of count = 2022

An 11 hour turning count was undertaken by DIT at the intersection of Swanport Road and Long Island Road. This was noted to be a school day. The results of the turning count are summarised below:

- Estimated Average Annual Daily Traffic (AADT) Swanport Road North Leg= 10,700³.
- Estimated Average Daily Traffic (AADT) Swanport Road South Leg= 9,500³.
- Estimated Average Daily Traffic (AADT) Long Island Road East Leg= 4,500³.
- Commercial Vehicles Content = 3.0% of total traffic volumes.
- Morning Peak Hour 8:00am to 9:00am = 728 vehicles.
- Afternoon Peak Hour 3:00pm to 4:00pm = 812 vehicles.
- Year of count = 2026.
- Approximate proportions of traffic distribution to Swanport Road from Long Island Road:
 - in AM Peak, Left Out (89): Right Out (71) = 5:4 (56%:44%).
 - in PM Peak, Left Out (59): Right Out (90) = 2:3 (40%:60%).
 - Total 11 Hour, Left Out (561): Right Out (910) = 3:5 (38%:62%).
- Approximate proportions of traffic distribution from Swanport Road to Long Island Road:
 - in AM Peak, Left In (198): Right In (173) = 8:7 (53%:47%).
 - in PM Peak, Left In (118): Right In (80) = 3:2 (60%:40%).
 - Total 11 Hour, Left In (1252): Right In (690) = 9:5 (64%:36%).
- Bicycle volumes on the North Leg of Swanport Road = 10 cyclists:
 - Cyclists recorded at 7:15am; 12:15pm; 1:45pm; 2:15pm; 2:45pm (x2); 3:15pm; 4:30pm; 5:00pm; 7:00pm).

Based on the available traffic volume data collected adjacent to the proposed MBHS Technical College Site, it is estimated that the current Swanport Road traffic volumes are:

- Average Annual Daily Traffic (AADT) (2016) = 10,700 vehicles per day
- Commercial Vehicles Content = 3% of total traffic volumes
- 10 cyclists per day

¹ Source: SA Viewer

² Source: DIT Classification Count UG390091 4/8/22 – 10-8/22

³ Source: DIT Turn Count UG436102 22/7/26

3.2.2 Swanport Road Posted Speed Limits

The posted speed limit on Swanport Road is 50km/h, and aligns with default urban speed limit in South Australia. A time-based school speed limits is in place that lowers the speed zone to 40km/h, and applies during school days from 8:00am to 9:30am and 2:00pm to 4:00pm. The location of the time-based school speed limit is between two Pedestrian Actuated Crossings (PACs) situated on Swanport Road, and as shown in Figure 3-2.

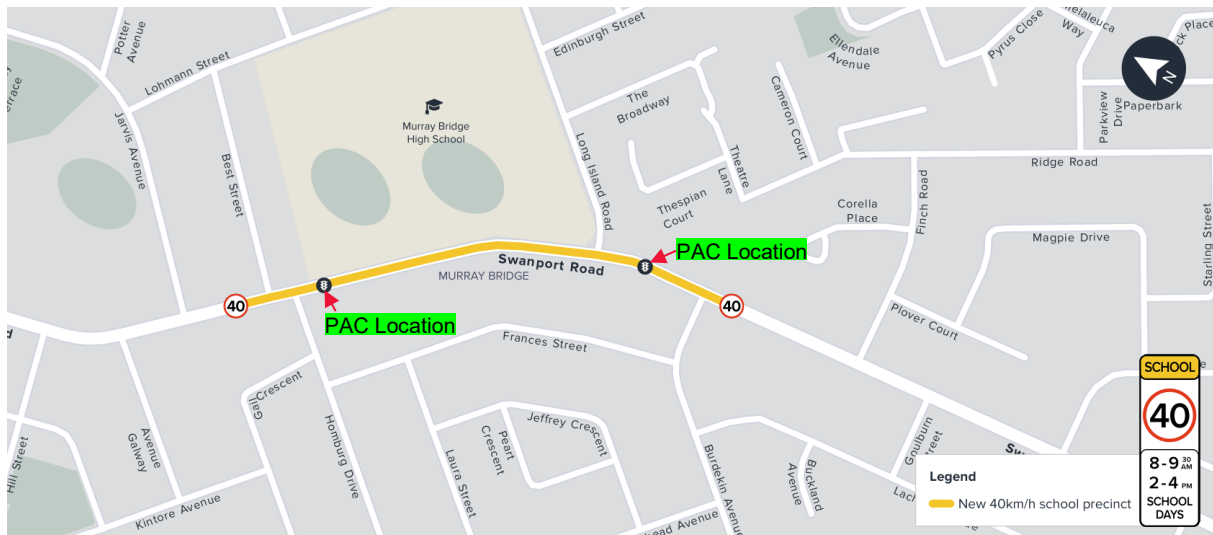


Figure 3-2: Temporary Speed Limit Extent on Swanport Road

3.3 Site Investigations

3.3.1 Morning Peak – Swanport Road

A site visit was conducted on the 26 June 2026. Traffic volumes were recorded for the morning peak (school time) between 8:15am to 9:15am on Swanport Road at the location of the northern PAC.

Traffic volumes in both the north and south bound direction were recorded in 15 minute intervals. Heavy and light vehicles were recorded separately to estimate the percentage of heavy vehicle. The findings are presented in Table 3-1.

Table 3-1: Morning Peak Investigation Findings (Swanport Road) 26 June 2026 8:15am – 9:15am

TIME PERIOD	HEAVY VEHICLES	LIGHT VEHICLES	TOTAL VEHICLES	CV %
8:15 – 8:30	10 ⁽¹⁾	178	188	5.3
8:30 – 8:45	12 ⁽²⁾	277	289	4.2
8:45 – 9:00	7 ⁽³⁾	230	237	3.0
9:00 – 9:15	5 ⁽⁴⁾	189	194	2.6
8:15 - 9:15	34	874	908	3.7

Notes:

(1) Heavy/Commercial Vehicles (CV) comprised of two (2) School Buses, three (3) 8m Rigid Trucks, one (1) 12m Rigid Truck, four (4) Regional Buses.

(2) CV comprised of one (1) 8m Rigid Truck, three (3) coaches, five (5) Regional Buses, and three (3) six-axle Articulated Trucks.

(3) CV comprised of one (1) 8m Rigid Truck, one (1) 12m Rigid Truck, two (2) Coaches, and three (3) Regional Buses.

(4) CV comprised of one (1) 8m Rigid Truck, three (3) 12m Rigid Trucks, and one (1) six Axle Articulated Truck.

These traffic counts indicate that:

- During the hour long count a total of 908 vehicles were counted with a CV percentage of 3.7%.
- During the hour count, the period of 8:30am to 8:45am indicated the heaviest traffic. 289 vehicles were recorded passing through the PAC on Swanport Road in the span of 15 minutes.

Within these intervals, the number of times the PAC was activated by pedestrians was recorded, as well as how many crossed and in which direction, as follows:

- During the busiest 15 minute interval (8:30am-8:45am), the PAC was activated 12 times, which equates to once every one minute and 20 seconds, with up to 14 pedestrians crossing at a time.
- The PAC was activated frequently up until 9:00am once the majority of students had arrived on campus, although late comers were noticed arriving after 9:00am. The average activation frequency across the full hour was every two minutes and eight seconds.
- Due to the PAC, queuing along Swanport Road was observed to have a maximum of 15 vehicles queued within the busiest period of between 8:30am and 8:45am. This equates to a queue length of approximately 87m southeast of the PAC. The queues will, on occasion, grow to just beyond the proposed access for the Technical College.

A detailed review of the PAC activations is provided in Table 3-2.

Table 3-2: Pedestrian Actuation Details 26/6/26 8:15am – 9:15am

TIME PERIOD	PAC CROSSING ACTIVATIONS (# PEDS/TIME (AM)) ⁽¹⁾	TOTAL PED CROSSING (TOTAL PEDS)	TOTAL PAC CROSSING ACTIVATIONS (# TIMES ACTIVATED)
8:15 – 8:30	1/8:19AM; 2/8:21AM; 3/8:22AM; 3/8:24AM; 3/8:25AM; 4/8:28AM; 1/8:27AM	17	7
8:30 – 8:45	14/8:30AM; 2/8:31AM; 8/8:33AM; 4/8:34AM; 2/8:35AM; 7/8:36AM; 12/8:38AM; 3/8:39AM; 1/8:41AM; 5/8:43AM; 2/8:44AM; 4/8:45AM	64	12
8:45 – 9:00	2/8:46AM; 4/8:47AM; 2/8:50AM; 1/8:52AM; 2/8:53AM; 2/8:55AM; 1/8:57AM; 1/8:59AM	15	8
9:00 – 9:15	1/9:02AM	1	1
TOTAL 8:15 - 9:15	-	97	28

(1) On two occasions pedestrians crossed Swanport Road without activating the PAC, which were included in the calculations.

3.4 Road Network Considerations

The following points are made in relation to **Swanport Road** in the vicinity of the MBHS:

- Is a two-lane arterial road.
- 12.5m kerb to kerb width with painted/kerb median.
- Part Time Bicycle Lanes both sides 8:00am-9:00am and 3:00pm-4:00pm. Parking is permitted outside of these times.
- Footpaths on both sides of road (becomes a shared path south of the MBHS on east side of road).
- Bus Stop and PAC located along the MBHS site.
- A service vehicle access is provided to the MBHS.

- Functions as the main arterial road to distribute traffic to/from the MBHS by connecting the local collector roads of Jarvis Avenue and Long Island Road (and to a lesser degree the local road Best Street).
- The National Heavy Vehicle Regulator (NHVR) database indicates that Swanport Road is not a gazetted freight route (there is an alternative heavy vehicle bypass that runs parallel via Maurice Road/Hindmarsh Road). On occasion a permit heavy vehicle (>19m Semi Trailer, general access vehicle) may travel on Swanport Road past the MBHS.
- Refer Figure 3-3 for photos of Swanport Road in relation to the proposed access/egress points.



Figure 3-3: General Photos for Swanport Road, Indicating Position of the Proposed Access

4 FUTURE DEVELOPMENT

4.1 Technical College Development

The Technical College is a new educational institution to be built on the current Murray Bridge High School Site. The design life for the Technical College will be 50 years.

The expected capacity of the new Murray Bridge Technical College is 250 part time students across years 10-12 but only 100 students on the site at one time and around 25 staff.

The times of operation are between 7:00am to 6:00pm with an expectation that adults and students will use the facility after school hours. The Technical College will provide student accommodation for up to 32 students.

The gross floor area (GFA) of the technical college is understood to be approximately 2,250 m².

4.2 Development Scenario

The scope of the redevelopment (relevant to the TIA) is summarised as follows:

- Workshops and stores are to have direct access to loading bays.
- Workshop stores are to have a goods receiving area for checking, logging and distribution of materials, equipment or resources delivered.
- Waste stores for internal waste storage collation prior to being moved to bins located externally.
- The Loading Bay requirements, as follows:
 - Large adaptable flat area.
 - To suite access by delivery vehicles and waste removal trucks.
 - Secured from unauthorised entry.
 - Consider workflow/circulation requirements of goods and materials to stores and into workshops.
 - Access through roller doors.
 - Some materials storage.
 - Include an adjacent waste management area accessed by a waste vehicle (4 × 1,500L Bins).

The redevelopment must consider the following traffic related matters⁴, as follows:

- Vehicular and pedestrian movement should be considered with clear separation where possible. Goods loading and access to waste areas should be carefully considered for suitable truck access.
- Separation of pedestrian and cycle traffic from vehicular traffic where possible.
- Clear sight lines and circulation zones to be provided between pedestrian and goods flow.
- Provision of bicycle racks in appropriate and secure location(s).

Adjacent to Swanport Road, the following aspects may have an interface with the proposed site access:

- Existing trees growing into areas that may obscure sight lines between adjacent road users, or obscure pedestrian movements around access points.
- Tree canopies and/or branches growing into areas that affect the intensity of road reserve related lighting areas.
- Tree or vegetation root growth into pavement areas causing distortion of the pavement or footpath surface or otherwise affecting the life, serviceability, or effective maintenance of the pavement or footpaths.

The Part 0 Investigations involve evaluating the impact of three development sites within available school land at 162-194 Swanport Road. Following the DIT review process, a single site has been selected. The selected site for the proposed Technical College conceptual layout is provided in Figure 4-1.

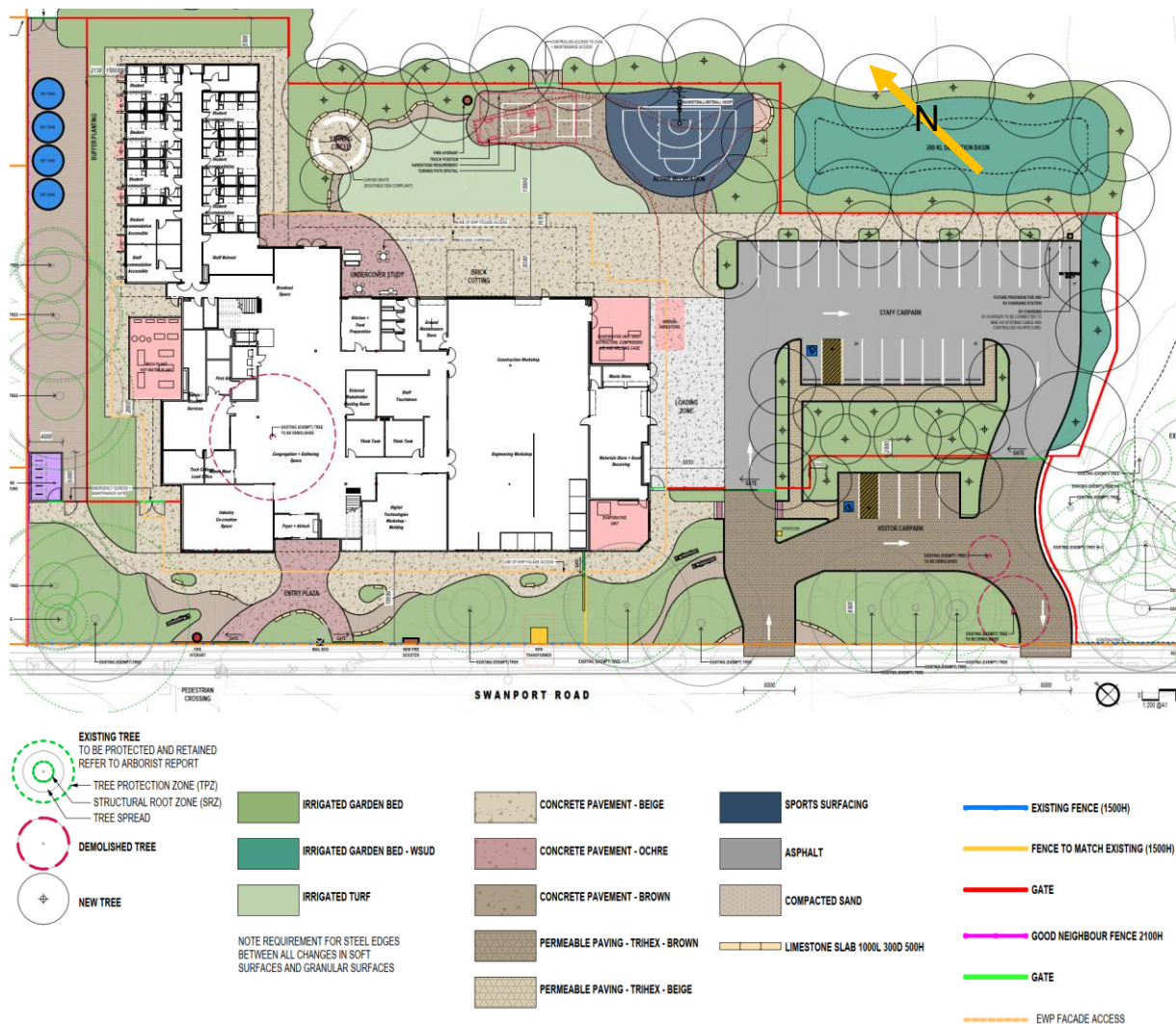


Figure 4-1: Proposal Site on Swanport Road for Technical College (Within the School Campus)

5 TRAFFIC IMPACTS

WGA has undertaken a high-level review to assess the feasibility of the proposed access (off Swanport Road) for the proposed Tech College.

To confirm, the usage hours are:

- Standard hours 7:00am - 6:00pm weekdays, reflecting “trade” hours (excluding school holidays).
- Occasional overnight stays.
- Unplanned use during weekends.

The vehicular access is to provide the following:

- Off-street parking for staff.
- Service and delivery vehicle access to loading area and waste storage.

Pedestrian and cyclist access is to consider the following:

- Separate from vehicular access.
- Leading to building entrance and bicycle parking (end of trip facilities).

Swanport Road's Peak Hour Traffic records³ indicate:

- 997 VPH during 8:00am - 9:00am (AM Peak Hour)
- 1,020 VPH during 3:00pm - 4:00pm (PM Peak Hour)

The new Technical College should allow for car parking in line with both the Planning and Design Code, and also the Department for Education (DfE) relevant standards and code references.

5.1 Trip Generation Assumptions

The Transport for New South Wales (TfNSW) Guide to Transport Impact Assessment (GTIA) Version 1.1 (November 2024) is widely accepted in Australia for estimating trip generation from various land uses. The GTIA provides a peak hour trip rate of 0.5 trips/student based on the average of 13 secondary schools.

The term ‘trip’ refers to a one-way movement from an origin or to a destination.

5.1.1 Peak Hour Traffic Forecast at the Site Access

The site aligns to Swanport Road with DIT records indicating an AADT of 10,700 vehicles per day or approximately 1,000 VPH in the morning and the afternoon peak hour.

The Technical College would be expected to generate up to 75 additional trips in the peak hour(s). These trips are expected to occur predominantly along Swanport Road. Some of the peak hour trips may be dispersed to other local roads, such as Long Island Road and Homburg Drive.

These additional volumes would likely be cumulative with background traffic, therefore theoretically increasing the peak hourly volume, up to 1,075 vehicles per hour during peak hours. This represents a potential 7% in volumes on Swanport Road, for morning and afternoon peaks, assuming that the generation from the Technical College overlaps with the existing peak hours of Swanport Road.

The above scenario, Technical College's peak hour trip generation occurring during the road network's peak hours, represents a conservative scenario as the Technical College's operating hours are 7:00am to 6:00pm which would result in the majority of staff and students arriving before 8:00am and leaving after 4:00pm. Only staff and visitor vehicles accessing the 30-space car park is endorsed by DfE and these should be the only vehicles entering or exiting the car park.

The proposed access (ingress) will be able to accommodate the expected level of staff and visitors entering the car park with moderate-high passing volumes on Swanport Road. The left turn (into the ingress) is a relatively free movement, and the right in movement may be momentarily delayed by oncoming southbound traffic on Swanport Road.

Traffic bunching from the PAC located to the north may provide additional headway (southbound) between platoons of vehicles that would assist in providing increased vehicles gaps for clearing stationary vehicles waiting to turn right into the car park. The warrant for an auxiliary turning lane for the access is discussed in Section 5.6.

The proposed access (egress) will be able to accommodate the relatively low levels of exiting traffic from the car park, even with moderate-high passing volumes, although may experience increased minor delays exiting due to short headway between traffic flow on Swanport Road. In the afternoon peak, these delays could form short queues back into the visitor car park, but the duration of delay will be relatively short.

Impacts on the greater network will be disbursed further at the Swanport Road/Adelaide Road signalised intersection. The dispersion of additional traffic generated by the new Technical College is expected to be adequately accommodated by the existing adjacent intersection due to the capacity of the existing intersection treatments.

5.2 Parking Generation

The DfE requirements indicate that parking is only required for staff and visitors (and not students' vehicles). There are 25 "full time" staff assumed to require off-street parking.

The Planning and Design Code (PDC) Part 4 "General Development Policies/Transport Access Parking/Table 1-General Off Street Car Parking Requirements/Educational Facility" indicates a rate of:

- 1.1 parks per full time employee.
- An additional 0.1 spaces per students for pick up/set down areas (either on site or on the public realm within 300m of the site).
- As outlined in the DfE standards in Section 5.3, senior student parking is not provided on school sites. Any parking for senior students would therefore need to be accommodated on street.

The parking requirements are indicated in Table 5-1.

Table 5-1: Technical College Parking Requirements

CATEGORY	PARKING RATE	NUMBER	LOCATION	PARKING REQUIREMENT
Staff	1.1/FTE	25	Off Street	28
Student Set-Down (PDC)	0.1/Student	100	On Street	10

Areas for student set-down includes:

- Swanport Road – part-time kerbside bicycle lane is provided along Swanport Road. The bicycle lane is in operation from 8.00am to 9.00am and 3.00pm to 4.00pm, which will limit times of on-street parking availability.
- Jarvis Avenue (to the north), Homburg Drive (to the west) and Lohmann Street (to the east) of the development site offer alternative areas for on-street parking, all within 300m of the site.
- Additional discussion is provided in Section 5.6 and illustrated in Figure 5-12.

The PCD does not require consideration to school bus parking.

5.3 Concept Car park

5.3.1 Access

Currently the MBHS's western boundary has a 1.5m high fence, and no vehicular access is permitted to the grounds. Students may access the grounds via a gate just south of the PAC, noting this gate is generally locked outside of school arrival and departure times.

The car park concept assumes a newly formed separated access (in only) opposite to No.169 Swanport Road and egress (out only) opposite to No. 173 Swanport Road. Site photos and the relative position of the access are provided in Figure 5-1. The new access position and layout to the car park is evident in Figure 4-1.



Swanport Road/Access View to South



Swanport Road/Access View to North

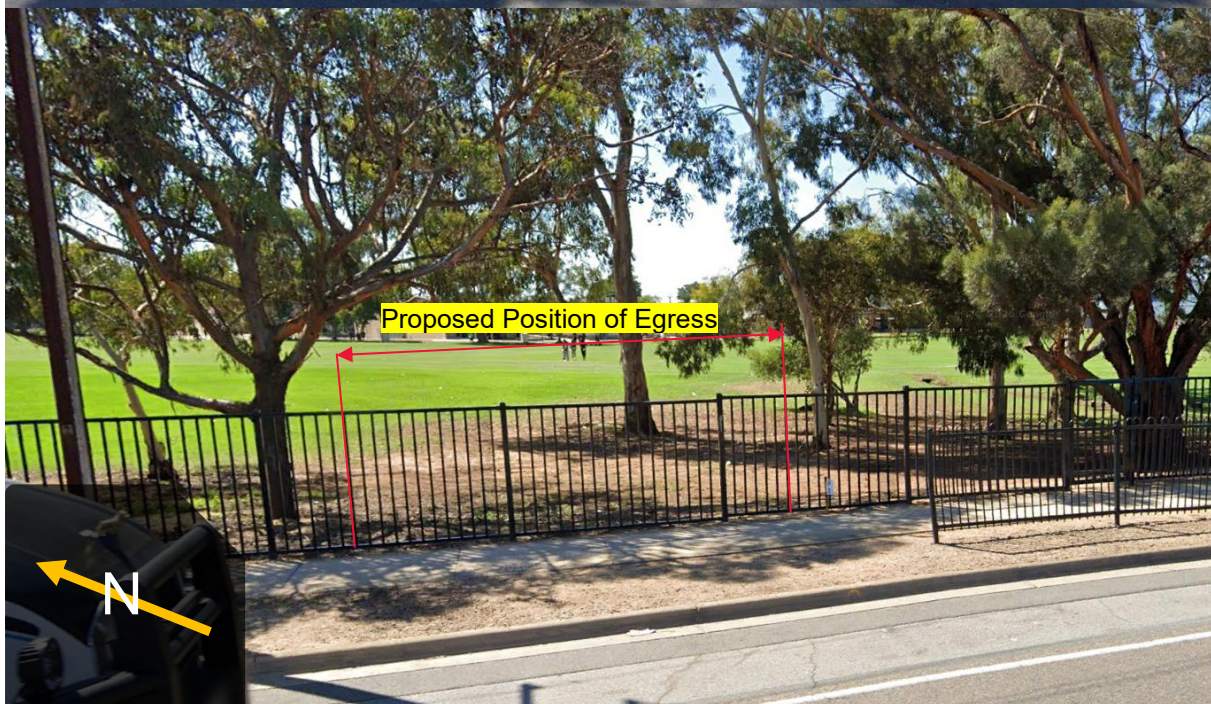


Figure 5-1: Swanport Road Photos Access and Egress Positions

The proposed access point location has considered the following matters:

- Proximity and sufficient distance to the following:
 - PAC Crossing:
 - The location of the new access (ingress) is appropriately 70m to the south of the PAC Crossing, which is considered adequately spaced away from the PAC.
 - Site observation identified up to 15 cars (or around 75 m) queuing on Swanport Road in the northbound direction. There is potential for the northbound queues from the PAC to extend past the proposed site access (70m from the PAC), potentially and momentarily restricting right turn movements into the site.
 - The location of the new access (egress) is appropriately 100m to the south of the PAC Crossing, which is considered adequately spaced away from the PAC, i.e. the egress is not expected to be affected by PAC queues.
 - The PAC will likely generate more student movements to and from the Technical College, however these will be absorbed into current pedestrian crossing activations. These are very frequent in the AM and PM Peaks and are likely to already be operating at the minimum cycle length as set by DIT Network Management. Therefore, the lengths of queues created by the PAC, either by the increased traffic or pedestrian generation, are not expected to increase significantly and queues should still clear each cycle as they do currently.
 - Adjacent Intersections:
 - The location of the new access is appropriately offset by around 110m to Homburg Drive and 250m to Long Island Road.
 - The location of the new egress is appropriately offset by around 140m to Homburg Drive and 220m to Long Island Road.
 - Adjacent access and egress points:
 - The location of the new egress is offset to the opposing driveway at No.173.
 - Due to the very low volumes of exiting vehicles, the potential for headlight glare of vehicles leaving after hours or after sunset (during winter) to shine onto No.173 (directly opposite on the west) is highly unlikely to cause any nuisance to the occupier of No. 173.
 - Additional consideration for the users of No.169 to leave their driveway with entering traffic to the new access opposite.
 - Additional consideration for the users of No.173 to leave their driveway with exiting traffic from the new access opposite.
 - These driveways might be used to access and park in the rubble road reserve opposite the site, for student drop off and pick-ups. If this is not desirable to Council or DIT, measures to discourage this activity may need to be implemented.
- The accesses (ingress and egress) will be relatively well lit from the existing lighting on the adjacent SAPN poles. The luminaires could also be easily upgraded if increased lighting output is desired.
- Parking at this location on Swanport Road is not regularly utilised and overlaps with a part time bike lane. Loss of parking spaces due to access creation is likely to be inconsequential.
- Passing Traffic Speeds is variable (noting the time-based school speed limit reduction to 40 km/h at certain times on school days). At other times Swanport Road operates at the default urban speed limit of 50 km/h.
- Service Impacts (at the access):
 - Overhead High Voltage and Low Voltage SA Power Networks (SAPN) poles on the east side of Swanport Road are located sufficiently away on either side of the access and are not expected to impact on the access.
 - SAPN pole is located closely to the egress (north side). This pole may create a sight line restriction, although can likely be looked around. The access location will likely avoid turning path conflict with the SAPN pole, however, requires further review. A minimum 1m clearance to the turn path of the check vehicle is recommended.
 - Stormwater infrastructure is located on the eastern side with a side entry pit (SEP) located adjacent to the proposed access. The turn paths do not indicate any major issues with the position of this SEP lid being subjected to wheel loading.

- Sewer is undefined and may not be in this area – no expected impacts.
- Water Main is located under the western side kerb of Swanport Road and not expected to be impacted by the development access.
- It is not evident whether Telstra and/or NBN communications are located within the road reserve at the access. Future investigations will need to assess live communications infrastructure for any impacts due to the development. Generally, these services can be accommodated below the access crossovers with protective techniques.
- Before You Dig information should be sought to determine additional impacts that may be present at the access point.
- New services for the Technical College should be designed cognisant with the access point construction and operations. Any above ground or surface infrastructure (poles, cabinets, hydrants, pits etc.) would achieve required adequate separation to turning traffic at the access point.
- The proposed access (ingress and egress) will likely require the removal of two existing trees. It is understood that the significant trees are avoided with (exempt) regulated and unregulated trees being removed.
- The proposed egress is located within 10m of the bus stop and proposed yellow no stopping lines will effectively run through the bus stop zone. Therefore, the yellow no stopping lines should be painted as a dashed lines (permitting bus to stop) but with the acceptance that when a bus is stopped this will create a sight line obstruction to exiting vehicles. The extent of sight lines and yellow no standing markings is depicted in Figure 5-3.

5.3.2 Access Sight Lines

Swanport Road is relatively straight to the north of the proposed site access, with a road curvature 135m to the south of the proposed ingress and 105m to the south of the proposed egress.

The creation of a new access will remove a number of potential on-street parks along the site's frontage on Swanport Road.

WGA has referred to AS/NZS 2890.1-2024 Off-Street Car Parking to assess sight lines at the proposed access:

- Refer to Figure 5-2 depicting the dimensions of the sight line requirement (Y = Entering Sight Distance i.e. ESD).
- The driver's eye line is a position 2.5m back from the kerb (and may align with fencing).
- The offset of "no parking" area should be measured from "driver's eye" 2.5m behind kerb to approaching traffic located up to the value "Y" (ESD) from the access.
- Where necessary, these sight lines at "out" access points should be "no parking/standing" areas.
- The desirable ESD is 69 m. ($ESD_{DESIRABLE} = 69m$ for 50 km/h Road Frontage Speed (refer AS 2890.1 "Figure 3.2" [desirable 5 second gap]).
- The minimum ESD is 45 m. ($ESD_{DESIRABLE} = 45m$ for 50 km/h Road Frontage Speed (refer AS 2890.1 "Figure 3.2" [SSD])).

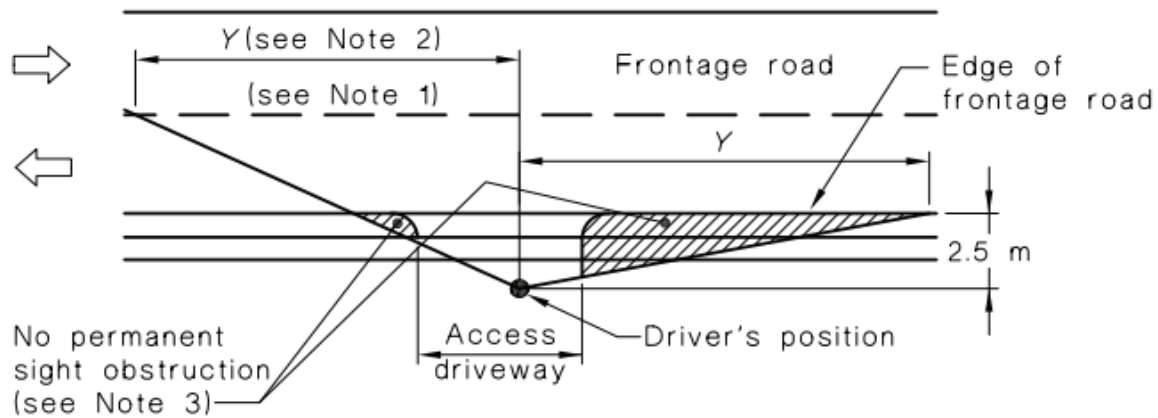


Figure 5-2: AS 2890.1 “Figure 3.2 Sight Distance Requirements at Access Driveways”

Achieving the required sight lines will require the introduction of parking restrictions along the Technical College’s frontage on Swanport Road as shown in Figure 5-3. The parking restrictions are represented as yellow “no standing” line markings.

It is estimated that the markings will exclude standing or parking from 8m north of the ingress up to 22m south of the egress, noting commentary in previous section about the relocation of the bus stop to effectively implement the parking controls.

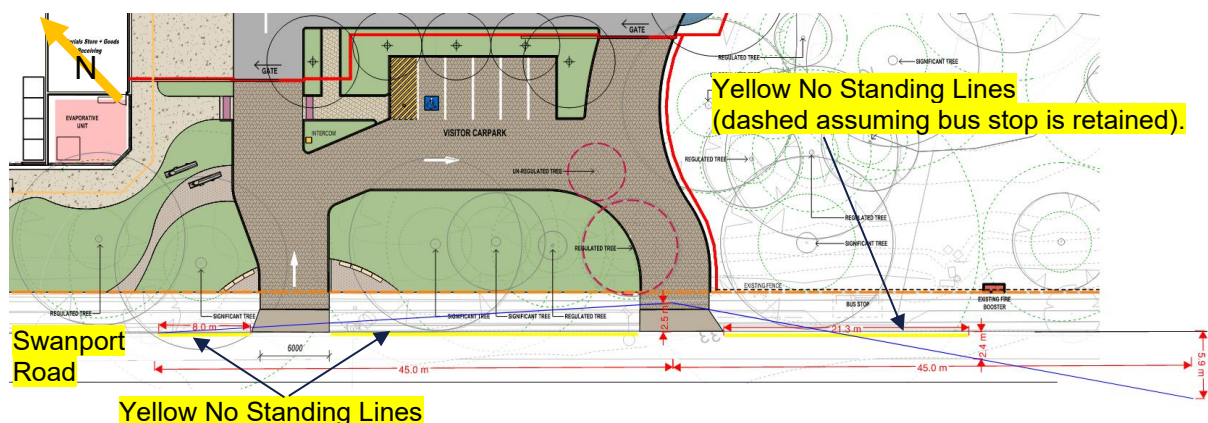


Figure 5-3: Impacts on Parking at Proposed Access to Achieve Minimum ESD

Considering the access abuts a DIT road, Safe Intersection Sight Distance (SISD) from Austroads Guide to Road Design Part 4A (AGRD4A) has been considered, noting this is not a mandated requirement for a new access point.

An SISD of 123m is required for a design speed of 60km/h (posted speed of 50 km/h). The flat topography, open curve alignment and relatively straight geometry of Swanport Road allows for SISD to be achieved on both approaches to the proposed egress, provided the sight lines are free of temporary obstructions (e.g. parked cars or standing bus). SISD achieved is estimated at 140m to/from the proposed egress, exceeding the requirement for a conservative design speed.

AS 2890.1 “Figure 3.2” also indicates the pedestrian sight line requirements at any access point. These are represented in Figure 5-4. These sight line requirements should be noted by the LPSC landscaping design to ensure clear sight lines are maintained.

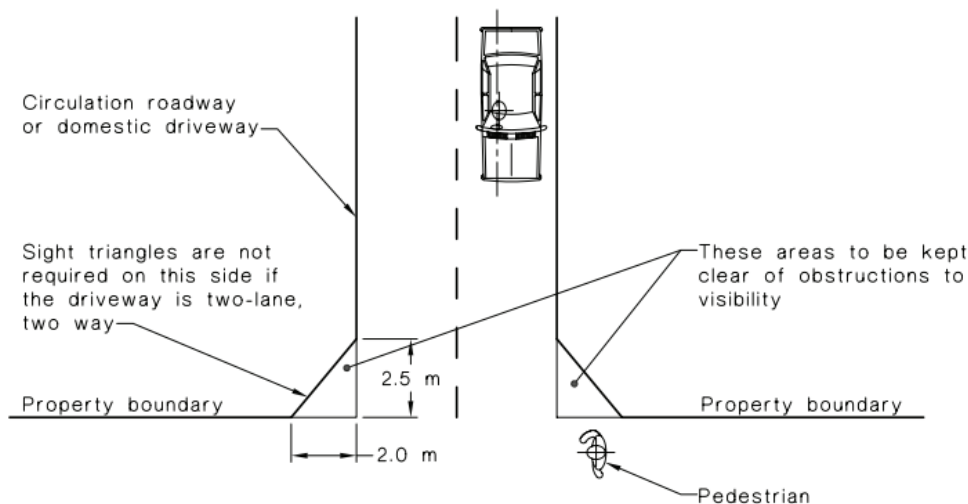


Figure 5-4: AS 2890.1 “Figure 3.3 Minimum Sight Lines for Pedestrian Safety”

5.3.3 Review of Conceptual Parking Layout

The conceptual layout of the proposed Technical College car park is provided in Figure 5-5. The new access and egress points are located immediately opposite the properties at No. 169 and No. 173 Swanport Road respectively.

The form of the car park is a circulating aisle with 90-degree parking to the east end of the car park for staff parking (25 spaces), with additional and separated 90-degree parking provided for student set down and visitors parking to the west side of the area (5 spaces). Therefore, a total of 30 spaces has been provided in the concept. Included in these space provisions are two DDA compliant accessible parks, one is proposed to the staff parking area and one to the visitor parking area.

The park dimensions are indicated to be 2.4m wide by 5.4m deep with aisle spacing of 6.2 m. This complies with AS 2890.1 “Off-Street Parking”. This will require rechecking as the design progresses.

The staff car park area is expected to be fully secured and an auto gate provided to the car park entrance (intercom with camera at the gate entrance and access control point at reception) to control after-hours access. This provision requires confirmation from the LPSC. Generally, it is expected that the gate will be open when staff arrive and depart the car park. The gate is recessed well within the boundary to permit vehicles to wait (and out of Swanport Road carriageway) while the gates are opening.

In the AM Peak the secured parking area is expected to receive up to 25 vehicles over the hour as staff arrive to the college. The gate takes around 12 seconds to open after the access is permitted and another 12 seconds to close. Therefore, the cycle time of the automatic security gate is up to 150 cycles/hour. This provides sufficient capacity to comfortably pass staff vehicles through the gate without creating major queuing effects i.e. the gate cycle could pass 25 vehicles in a timeframe of 11 minutes. The gate is set back over 20m from Swanport Road, providing enough space for at least four staff vehicles to queue before reaching a queue back into Swanport Road. In the event of queuing beyond this extent the visitor car park area provides additional space for standing staff vehicles.

The auto gate is positioned so that the check vehicle (12.5m Heavy Rigid Vehicle) can pull up at the locked gate with the rear of their vehicle clear of the Swanport Road through and bicycle lanes. The frequency of the delivery vehicle being impeded at the gate is only expected to occur rarely. The heavy vehicle driver may need to disembark their vehicle to activate the intercom.

With respect to Electric Vehicle (EV) chargers, these are to be detailed, with the understanding that at least one EV charger will be provided for visitor parking and one for staff parking. The EV charger would be connected to BMS via Systimax cable and controlled via RFID card. The EV space(s) will be required to be 2.6m wide.

There is no provision for student parking in the concept.

Whilst a 12.5m long vehicle (equivalent to a large bus) can successfully navigate through the car park, bus parking will generally utilise existing on ground parking off Long Island Road (no bus parking provisions within the new car park concept). When the bike lane is in operation, any buses attempting to drop off students to the technical college will be required to access and stand within the car park (secured zone). The movement is demonstrated in Figure 5-5. Otherwise, bus parking on Swanport Road can occur for student set down or pick up. Australian Road Rule 187(2a) allows for public buses to stop within a bicycle lane to load or unload passengers.

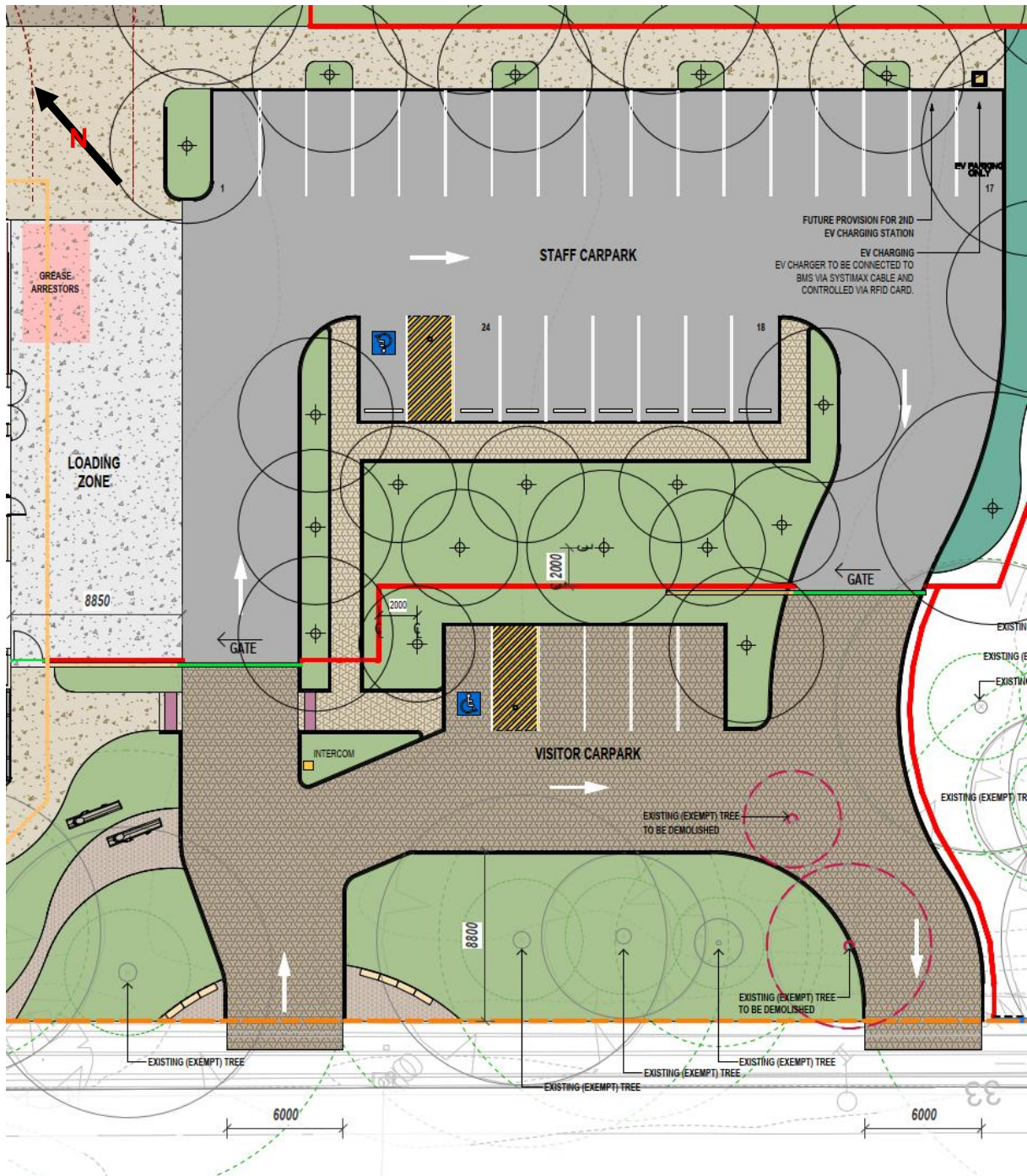


Figure 5-5: Conceptual Layout of Car Park

The new Technical College should allow for car parking in line with Department for Education (DfE) standards and relevant codes.

The key items from the DfE standards (2024) for car parking assessment are listed from the “Educational Facilities Design Standards (2024)”⁴ and are described in Table 5-2.

Table 5-2: Review of Conceptual Car park against DfE Standards

DFE REQUIREMENT	COMMENTARY TO DFE STANDARD	COMPLIANCE WITH DFE STANDARD
Reviewed to AS 2890.1 “Off-Street Parking” requirements: • Class 1 parking (low turnover) for staff parking spaces. • 90-degree parking will yield the most parks for the available space. • Space width of 2.4 m; Space length of 5.4 m. • Aisle Width of 5.8 m. • At least one space should be accessible parking (AS 2890.6).	• Adopted. • Adopted. • Parking spaces comply (refer Figure 5-5). • Complies (over 6m provided). • Two accessible parks are provided in the concept to meet building code requirements.	Compliant to AS 2890.1 at the conceptual level.
Internal roadways: • Access roads into the school site must be kept to a minimum and only to provide convenient delivery of goods to the administration, canteen, design and technology workshops and art buildings, for grounds maintenance and access to mechanical and electrical plant, and to waste disposal areas. The objective is to keep vehicles to the periphery of the school site. • Vehicle reversing in school grounds must be avoided wherever possible. • Access and manoeuvrability of industrial bin collection vehicles must be considered. • Two-way roadways are a minimum of 5,500 mm wide between kerbs. • One-way roadways are a minimum of 3,000 mm wide between kerbs.	• The access point is a single one-way access off Swanport Road opposite No.169. There is no canteen requiring food delivery. The bins and storage are located in the loading bay zone. The area is immediately adjacent to the workshops where most deliveries would be made. The loading bay is between the staff car park and the building (considered “on the periphery”). • Staff vehicles will be required to reverse out of parks. Circulating car park with most movements being forward. • The waste collection vehicle and check vehicle can traverse through the site (refer Figure 5-6 and Figure 5-7). • Not Applicable. • The one-way accesses are in excess of 3,000mm wide (6,000mm provided).	Generally compliant with DfE requirements at the conceptual level.

DFE REQUIREMENT	COMMENTARY TO DFE STANDARD	COMPLIANCE WITH DFE STANDARD
Provisions of safety features external to the school: • Avoid congestion at entrance and access points. Vehicle speed inside the facility. • External traffic volume passing the facility at any time. • Are traffic lights and other monitoring systems required. Visibility and site conditions. • Median strips. • Pick up/set down and parking bays. • Special surface treatments. • Street signs. • Fences. • Landscape design. • Consultation with the site, governing council, local government and transport authorities must take place at the feasibility and design stage. Where practicable, pick up and set down zones must be provided for students travelling by car or bus. A median strip off site is a desirable feature as it provides additional pedestrian safety and prevents vehicles from making U turns.	• “No Standing” may be required adjacent to the new access point to provide appropriate sight lines. • The small car park will limit speeds. • Development will generate up to 75 vehicles/hour on Swanport Street. • There is potential for queue backs interfering with the (in) access due to the PAC. • Refer Section 5.3.2. • Swanport Road has no median strip. • 25 staff parks are provided with an additional 5 visitor/pick up/set down parks. • The car park is to be sealed. • NA at conceptual level. • The staff parking area will be secured. • A landscaping area is shown in the proposal, with many existing trees retained. This has the potential to limit sight lines. Further discussion in report. • The design provides an area of segregated visitor parking adjacent/west to the staff parking, in an unsecured area. It is understood that this may be available for some student drop off subject to DfE. Otherwise pick up and set down will be provided on-street.	Compliant noting further development of the design will provide additional detail to these requirements.
Schools must develop a traffic management policy which reflects the local traffic and parking issues.	• There has been no traffic management policy determined at this time. The work is ongoing.	Further development of the design will provide additional detail to these requirements.
Staff and visitor’s car parking: • Where possible, car parking must be provided for staff and visitors located close to and in view of the administration area. Car parks must be designed to avoid conflict between pedestrian, student and bicycle access and site circulation.	• The administration to the west of the building site will not be in view of the parking area. CCTV may be required. The car park is offset to main pedestrian circulation spaces (including bicycle access, which is isolated to the north side of the site).	Compliant noting further development of the design will provide additional detail to these requirements.

DFE REQUIREMENT	COMMENTARY TO DFE STANDARD	COMPLIANCE WITH DFE STANDARD
- New schools and major refurbishments must consider the integration of electric vehicle charging points/infrastructure to assist in the transition to low carbon forms of transport. - Provide one car parking space for each staff member (full time equivalent) plus 10% for visitors (or five spaces whichever is greater). With the increasing use of schools by the community negotiations must be undertaken by the school, in consultation with the department, with the local council to provide additional off-site parking adjacent to the school, or as part of neighbourhood facilities.	- Provision of sufficient number of power outlets will need to be considered in design development of the car park. One or two EV spaces are proposed. 25 Secured staff spaces are provided for with the additional 10% (5 spaces are provided, as per the minimum requirement) in the unsecured off street parking area.	
Senior students parking: - The department does not provide an area for student car parking on the school site, even in instances where the local council prohibits parking in the surrounding streets. - The allocation of space by schools for senior student parking must only be specified with written approval from the department. - The department will not undertake or incur costs for this provision. No compensation will be considered if the area is required later for other educational purposes.	No parking is provided for senior students. Student parking will be off street. Areas of off-street parking is discussed in proceeding section.	Compliant
Pick up and set down provisions: - Pick up and set down provisions must not be provided on primary or secondary school sites unless there is an exceptional circumstance which has written approval from the department. - Such areas are to be constructed on the public thoroughfare in order to afford users protection under the Road Traffic Act 1961. - Negotiations are to be undertaken with local government authorities to provide these facilities on roads or public reserves adjoining the school. - Negotiations may be entered into concerning the grant of an appropriate portion of school	A shared visitor parking area may also be utilised for (temporary standing) pick up or set down provisions in the conceptual plan. At times of very heavy student activity and start/end times, on-street spaces (e.g. Homburg Drive) may be required for set down or pick-ups.	Compliant

DFE REQUIREMENT	COMMENTARY TO DFE STANDARD	COMPLIANCE WITH DFE STANDARD
property to local government or DIT for the purpose of constructing a pick up and set down facility. The department may assist with funding for the construction of pick up and set down areas adjacent to schools, provided that the development is undertaken as part of the school construction phase.		

5.3.4 Heavy Vehicle Turn Path Review

It is expected that the waste collection vehicle is the design vehicle and the 12.5m Heavy Rigid Vehicle is the checking vehicle for the car park. CFS fire-truck dimensions are generally less than the design vehicle size (12.5 m), which will govern the assessment. In addition, it is expected that a limitation of a 12-seater bus will be the maximum size bus to access the car park. Larger “coach” buses are generally 12.5m long and would also be able to access the car park as per the check vehicle, however in most cases will be required to park on the street if and when required.

Figure 5-6 provides the turn path sketch for the waste collection vehicle (Side Lift 9.8m “Recycling Truck”). The design vehicle can traverse through the car park without significant conflicts.

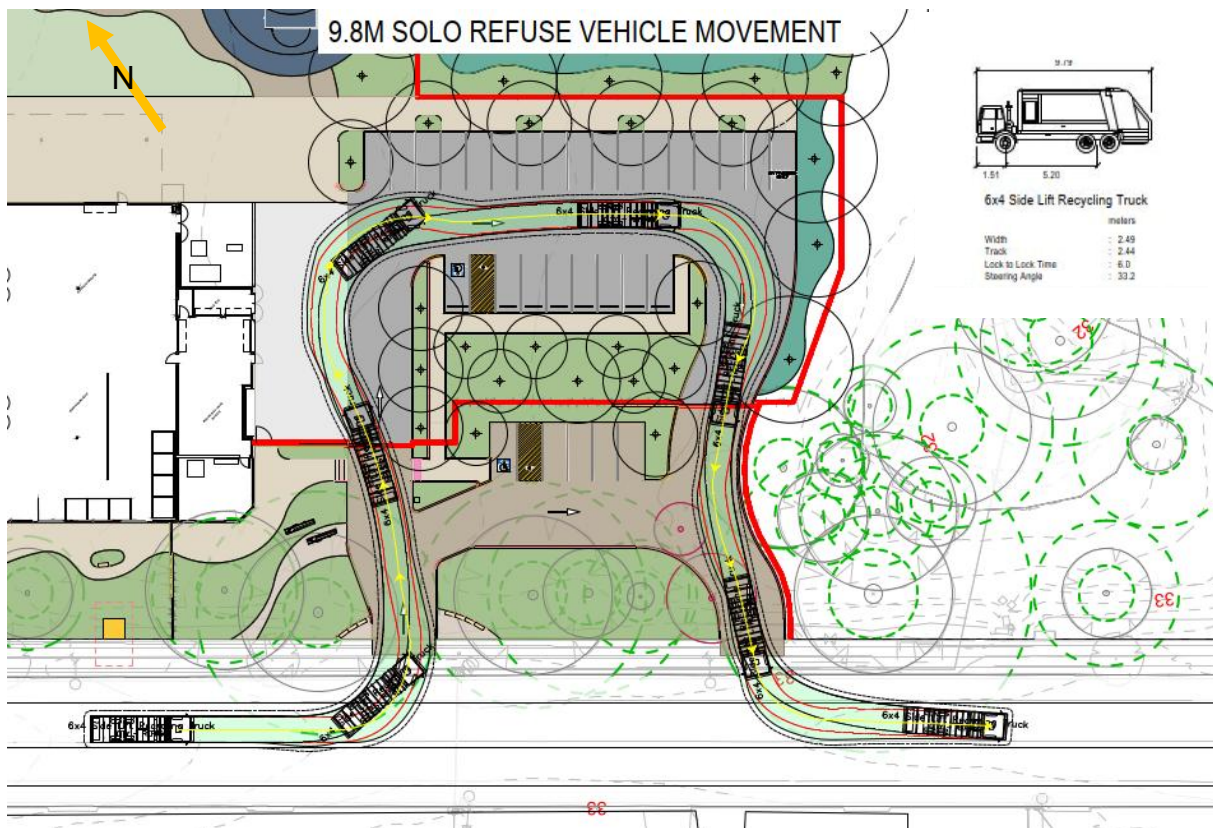


Figure 5-6: Car park Turn Path Waste Collection Vehicle (9.8 m)

Figure 5-7 provides the turn path sketch for a checking vehicle, being a 12.5m Heavy Rigid Vehicle. This “check” vehicle can navigate within the aisles of the circulating/secure car park area with some areas of tighter clearance to raised islands. It is noted that both access and egress crossovers will require flaring to accommodate the check vehicle (and for the egress a check on suitable clearance to the SAPN pole, for a right turn out). A 12.5m coach bus has a similar footprint as the 12.5m Heavy Rigid Vehicle and therefore can also navigate around the car park also, as depicted. Neither vehicle will be able to access the central aisle, which is too tight to turn into, or out of.

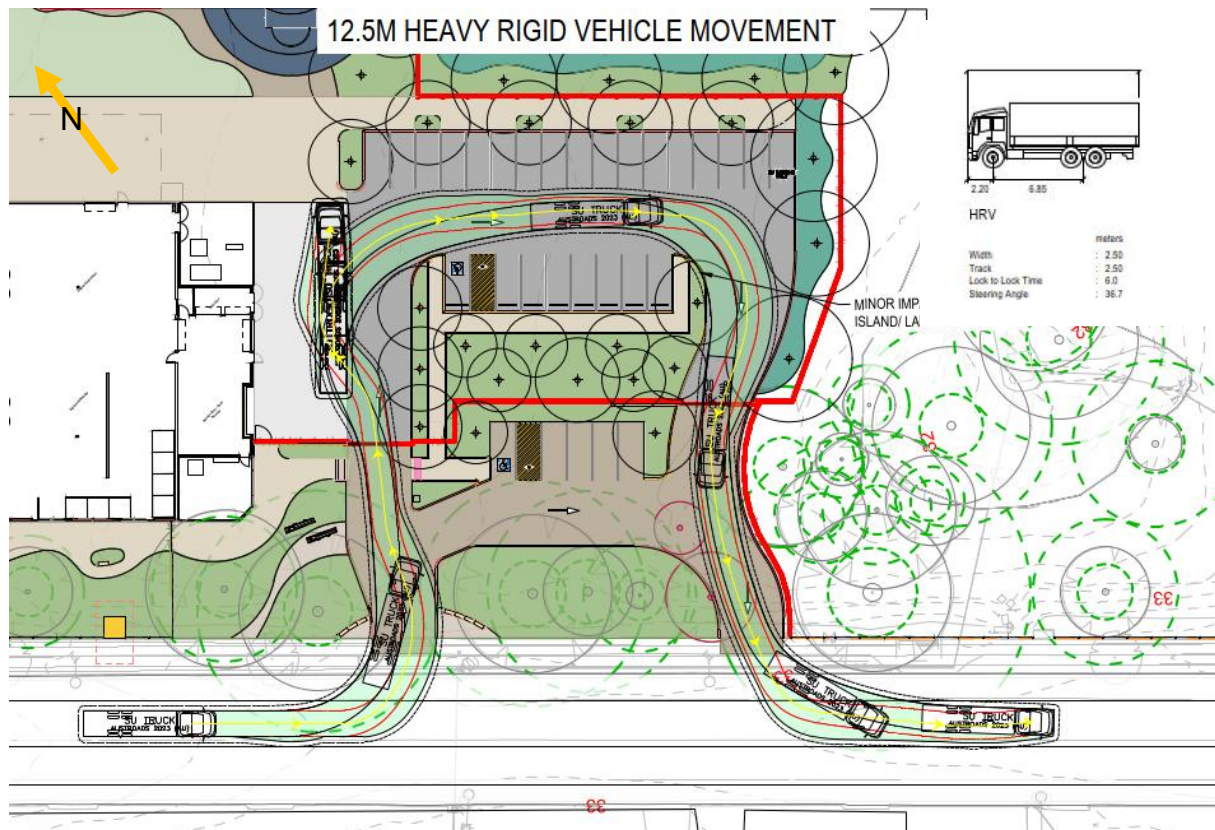


Figure 5-7: Car park Turn Path Heavy Rigid Truck (12.5m)

A representative Metropolitan Fire Service (MFS) and or Country Fire Service (CFS) fire fighting vehicle has been modelled as shown in Figure 5-8. This vehicle is an 8.8m long “Fire Truck Pumper” which is shown to be accessing the hydrant to the rear (east side) of the technical college.

Whilst this vehicle can successfully navigate the car park and affected adjacent area, a reverse movement is required into the loading area, to depart the rear of the building/hydrant area. Reverse movements are undesirable from the perspective of the MFS or CFS, which may require a spotter, and further consultation with relevant stakeholders may be required on this aspect.

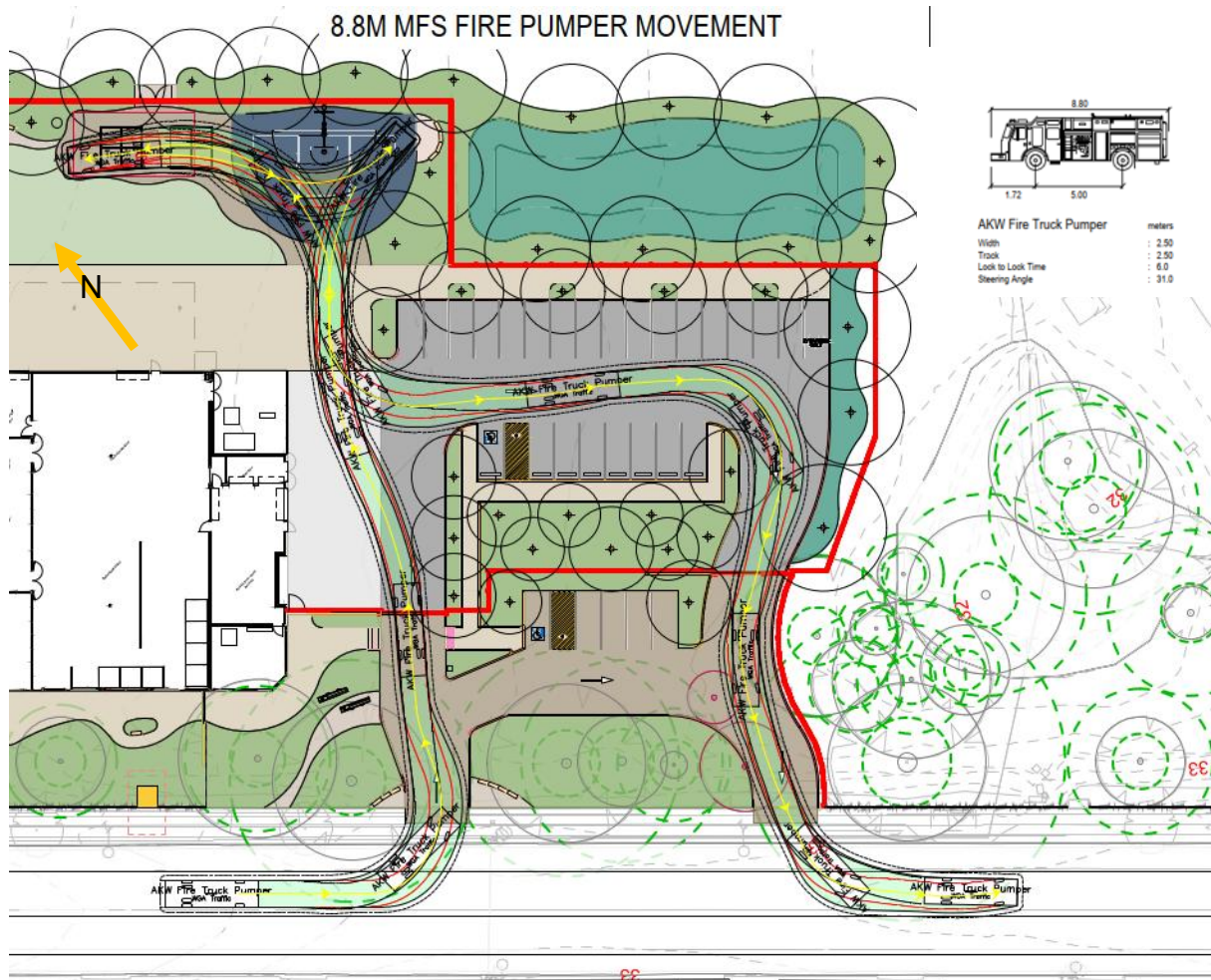


Figure 5-8: Car park Turn Path Metro Fire Service Vehicle (8.8m)

5.4 Cyclists and Infrastructure

Bicycle facilities are important for encouraging active travel and should be incorporated in subsequent design development.

The PDC Table 3 “Off-Street Bicycle Parking Requirements” indicates that for an Educational Facility, Secondary/Tertiary School, one space per 20 full time employees plus 1 space per 10 full time students.

This equates to one bicycle parking space for FTEs, and 10 bicycle parking spaces for students; 11 bicycle parking spaces in total.

The bicycle facilities should consider the following:

- 11 bicycle parking spaces, with consideration for secured storage.
- Easy access for cyclists (preferably at a Technical College’s entrance).
- Avoid conflict with other vehicles or pedestrians (e.g., avoid cyclist movements through car park).
- Secure (fenced) storage in a visible area.
- Bicycle parking facilities shall be designed in accordance with AS 2890.3 (2015).

The concept plans indicate a 24m² bicycle storage area to the north-western end of the site. The location of the bike storage area takes into consideration the above points.

Cycling is supported by a network of interconnected principal routes and local routes around the MBHS. Swanport Road is designated a Principal Cycling route. These existing routes are indicated in Figure 5-8 (source Murray Bridge Walking and Cycling Masterplan [2018]). However, the Long Island Road/Swanport Road Turning count indicated a low volume of cyclists on Swanport Road (10 cyclists per day).

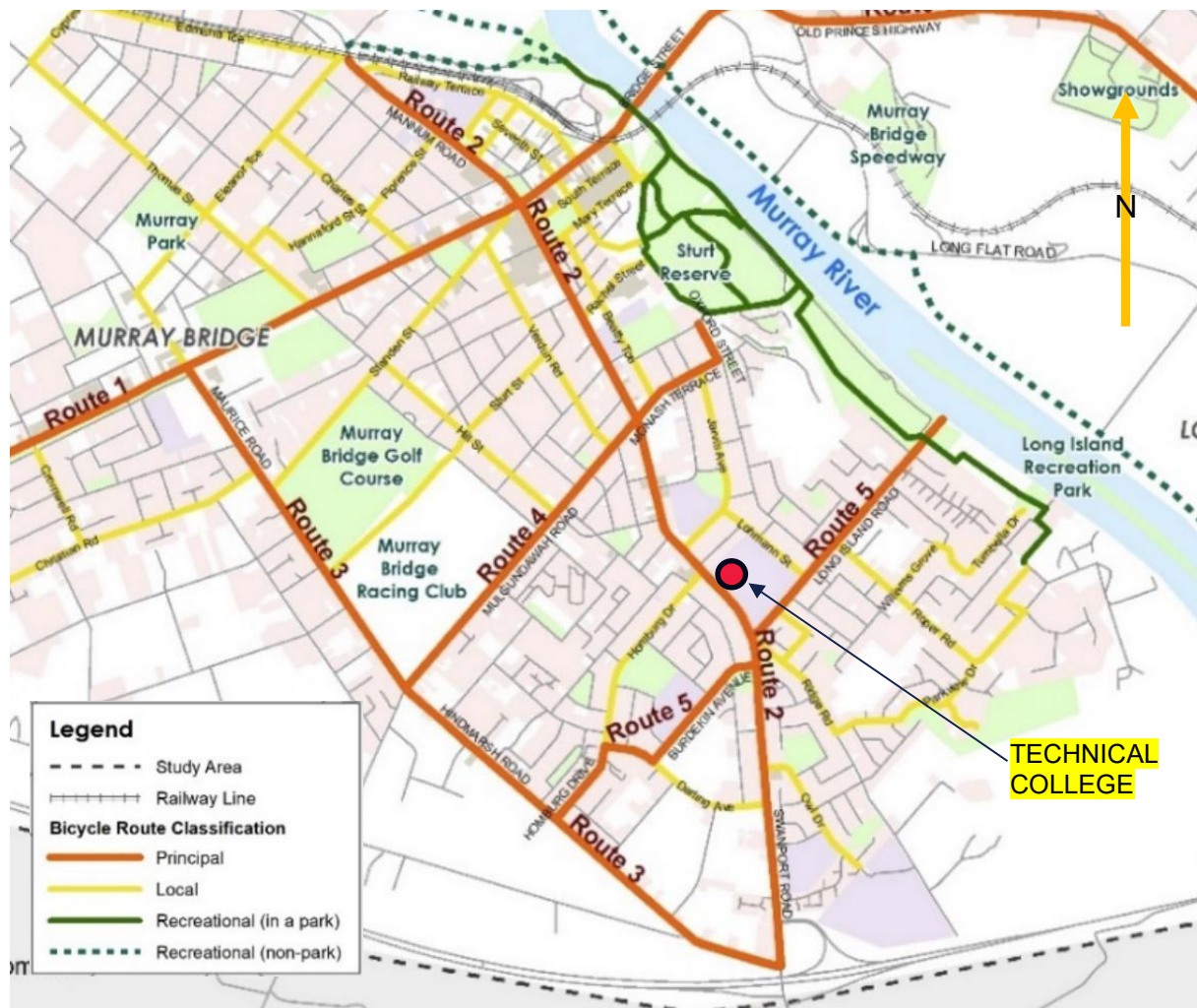


Figure 5-9: Cycling Routes and Linkages, Murray Bridge

5.5 Pedestrians and Infrastructure

Established pedestrian linkages with footpaths and road crossings are already evident on Swanport Road. Some of these linkages are represented in Figure 5-9 as follows.

- Northern PAC on Swanport Road, 40m South of Homburg Drive.
- Southern PAC on Swanport Road, 60m South of Long Island Road.
- A high standard shared path south of the High School/Long Island Road, running on the east side parallel to Swanport Road. The passive crossing north-south is a relatively high standard with wide pram ramps and handrails, but no refuge (depicted in photo inset Figure 5-9).

Two existing PAC's on Swanport Road provide controlled pedestrian access from the south-western areas, from either the north or south approaches to the school, so enabling safe crossings of the arterial road are addressed to a relatively high standard. Additional student crossings generated by the technical college can be absorbed into the current PAC activations (more students will cross the road at roughly the same activation intervals).

Access to the Technical College via the eastern areas is generally via the local road network, the roads closest to the school (Long Island Road and Lohmann Street) have school zone speed limits (25 km/h when children are present) to assist with pedestrian crossings. Whilst pram ramps are located at intersecting local roads, pedestrian road crossings in these local areas are distributed relatively randomly and occur on a more informal basis.

Internally, the site does not provide formal “paved” connections to the proposed Technical College, with the main high school separated by the athletic pitches. Formal connections (sealed footpath) between the proposed Technical College and the MBHS buildings and connecting beyond to the northern and eastern residential areas may be worthwhile considering, to concentrate movements, providing all weather access and prevent areas of ground compaction and degradation through foot traffic.



Figure 5-10: External Pedestrian Linkages on Swanport Road

5.6 Turning movements at the Access

The Technical College car park will generate a low-moderate amount of turning movements.

The proposed access serving 30 car parking spaces was assessed for turn lane treatment warrant using Austroads Guide to Traffic Management (AGTM) Part 6.

The turn lane treatment warrant assessment assumes the following:

- Off-street parking only for staff is proposed at the Technical College site.
- No student parking is proposed at the site.
- No student drop-off/pick-up area is proposed within the site
- The Technical College's peak hour coincides with Swanport Road's peak hours
- The entire staff arrives and leaves the site during the peak hours (i.e. 25 vehicular trips generated in one hour).

- Student drop-off and pick-up to occur on public realm within 300m of the site and are not included in the site generation.
- Visitors arrive to the site outside of the peak hour times.

Additionally, considering the MBSL provincial location south of the Murray Bridge CBD, it is reasonable to assume that the majority of staff and student trips will generate from the north of the site and only require a left turn from Swanport Road into the car park.

A traffic distribution diagram is provided in Figure 5-10 for the assumed movements that generate toward the new access and away from the new egress points. Based upon the high school's southerly position to the "built-up" Murray Bridge area, it is assumed that 70% of staff traffic is generated from the CBD side (north) of Murray Bridge toward the access in the AM Peak. This considers an allowance for growth within the south region of Murray Bridge, which is planned for residential development. The same proportion of car park traffic is assumed to return in those respective directions in the PM Peak.

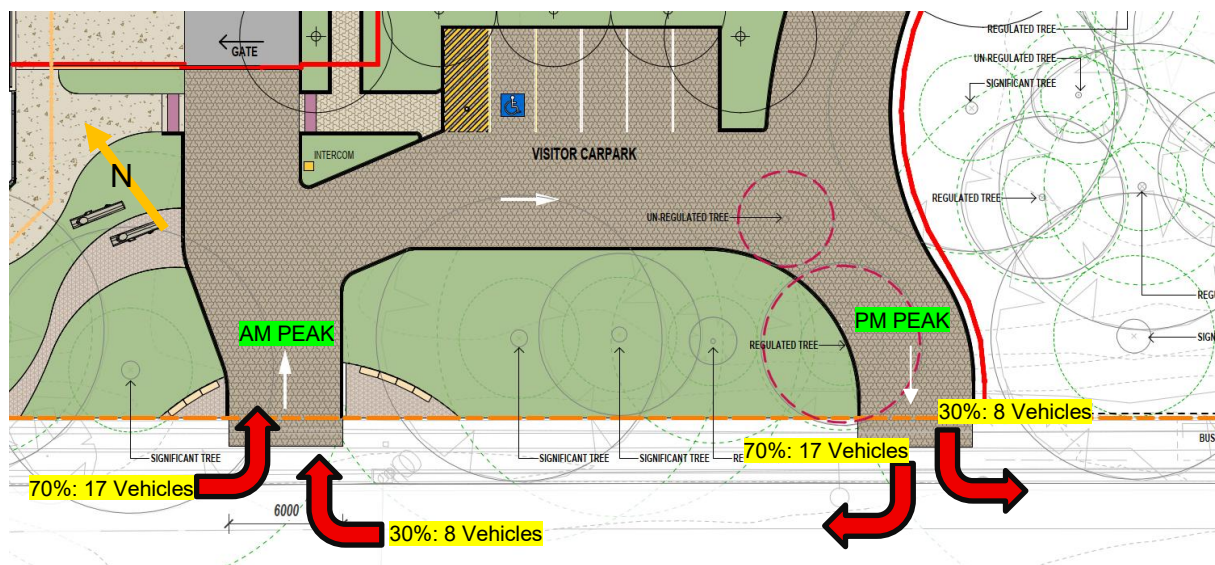


Figure 5-11: Traffic Distribution Diagram

Due to the relatively heavy volumes on Swanport Road, the Austroads Warrant (Austroads Guide to Traffic Management Part 6 "Figure 3.25") at the suggested right turning movement, is on the interface between a Basic Auxiliary Right Turn Treatment (BAR) and a Shortened Channelised Right Turn Treatment (CHR[S]) – refer to Figure 5-11.

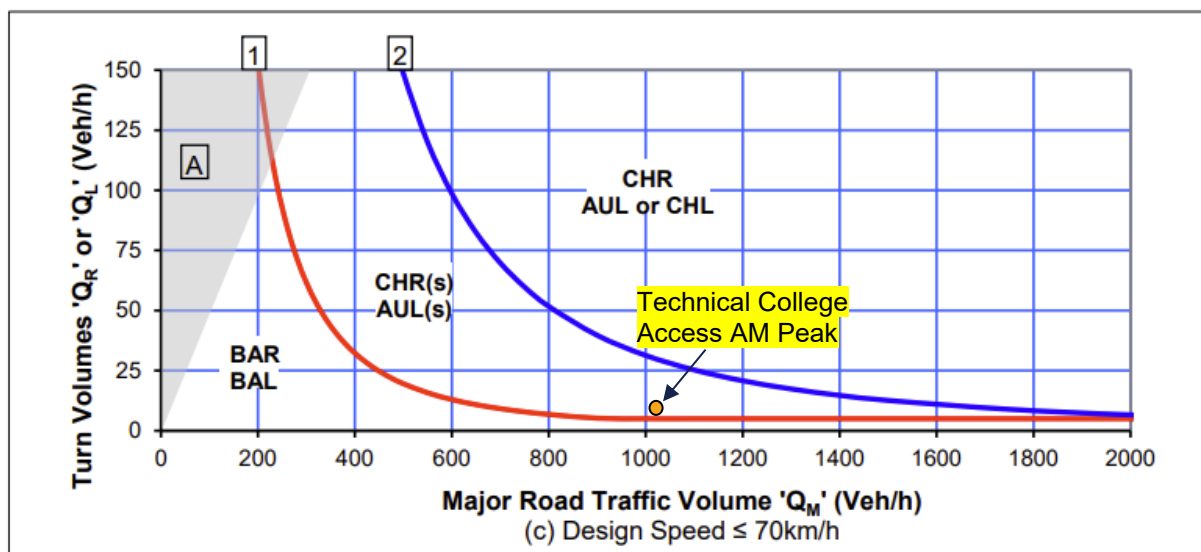


Figure 5-12: Turn Lane Warrants from AGTM6 "Figure 3.25"

The marginal warrant for a CHR(S) is sought for exemption on the following basis:

- There are many examples of development where the warrants are not imposed by the authority, particularly in urban areas where roads are already kerbed.
- The northbound lane width is approximately 6.2m between the centreline and the kerb, including a 2.0m bicycle lane. During peak hour the bicycle lane is in operation so there is no parking allowed when right turning is expected. Therefore, the total northbound lane width comfortably provides sufficient space to manoeuvre around a vehicle waiting to turn right into the car park ingress.
- A vehicle may legally drive in a bicycle lane for up to 50m (Australian Road Rule 158.1(c)) to overtake a right turning vehicle.
- There is significant approach sight distance to the rear of a right turning vehicle, well in excess of the stopping sight distance for a design speed of 60km/h ($SSD_{60km/h \text{ DESIRABLE}} = 73m$).
- A CHR(S) facility would consume valuable road space otherwise utilised for on-street parking (when bicycle lanes are not in operation), create a curving geometric realignment for through traffic adjacent to a bike lane, and bring through vehicles closer to established residences.

Based on WGA's assessment the Swanport Road access is considered suitable and compliant with the requirement of AS2890.1.

5.7 Student (on street) Parking Considerations

The concept layout doesn't include any student parking. As such, students driving themselves will be required to park in the vicinity of the Technical College. Due to bicycle lane restrictions, all day parking along Swanport Road is not possible. Therefore, student parking, drop-off and pick-up is to occur on public realm within 300m of the site, as stipulated by the PCD.

Due to the diametric position of the Technical College to the High School, being located on the west side of the campus as opposed to the east side, the student generation for the Technical College does not compete with the existing high school student drop off areas which are generally concentrated around Long Island Road and Lohmann Street.

There is considered suitable on street parking available along Homburg Drive, and Jarvis Avenue to adequately accommodate the additional parking demand generated by the Technical College. Total available on-street parking, for either long term student parking, or short term pick up and drop offs, is indicated as follows:

- Jarvis Avenue: 33 Parks
- Homburg Drive: 17 Parks

The locations of potential on street parking areas (available without restrictions such as parking zone time limits or temporary bike lanes) are provided in Figure 5-12. The black dashed circle depicts a 300m radius from the entrance of the proposed technical college, and the red dashes roughly indicate "spare" parking spaces.

Within the 300m radius, approximately 50 on-street parking spaces are indicated in Figure 5-12, assuming around 50% of the parking is already occupied by local users or driveways (and hence unavailable for student parking or set down). Best Street has not been included as a potential on-street parking area due to its limited road width.



Figure 5-13: Locations of On-Street Parking within 300m of the Tech College entrance.

Based on WGA's assessment the availability of at least ten (10) on street parking spaces within public realm 300m of the Technical College, is considered suitable and compliant with the requirement of the PDC.

6 SUMMARY

The key findings and recommendations of this Traffic Impact Assessment are summarised below:

- Report Summary and Outstanding Actions:
 - The Traffic Impact Assessment supports the PIP Part 1 Concept Design Investigations for the proposed Murray Bridge Technical College within the existing MBHS on Swanport Road.
 - The proposed Technical College is expected to accommodate up to 100 students on site at one time and approximately 25 staff, operating generally between 7:00am and 6:00pm, with potential for after-hours use.
 - Existing Swanport Road conditions are influenced by the arterial road peak hour traffic, PAC and associated concentrated school peak-period activity. However, it is noted that the parking demand is currently low at the site.
 - Morning and afternoon site investigations confirmed that peak activity occurs over relatively short periods, with the PAC contributing to short-term queuing and platooning on Swanport Road. Vehicular and pedestrian impacts imposed by traffic generated by the Technical College are expected to be manageable.
 - The proposed access opposite No.169 Swanport Road is considered suitable, noting the provision of sight lines to AS 2890.1, including consideration for landscaping setbacks.
 - The current concept provides 25 staff parking spaces and 5 visitor parks, which meets the spaces required under the SA Planning and Design Code assessment.
 - The report identifies that 10 student “pick up/set down” spaces are required under the Planning and Design Code, these are accommodated on street within 300m of the site, rather than within the site. Student parking is not accommodated on site.
 - Provision for at least 11 secure bicycle spaces (racks) has been provided to the north-west side of the building, to meet the Planning and Design Code.
 - The conceptual car park is generally compliant with AS 2890.1 at concept level, but several detailed design matters remain unresolved, particularly around EV charging and surveillance of the parking area.
 - Turn path checks indicate a 9.82m waste collection vehicle and 12.5m heavy rigid vehicle (or large bus/coach) can negotiate the internal car park and loading area with tight manoeuvring.
 - Overall, the proposed Technical College can be accommodated from a traffic and access perspective, provided stakeholder consultation matters are resolved through later design phases.



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Annexure B2



BESIX Watpac

Murray Bridge Technical College

STORMWATER MANAGEMENT PLAN

WGA261229

WGA261229-RP-CV-0001_A

25 August 2026



Revision History

REV	DATE	ISSUE	ORIGINATOR	CHECKER	APPROVER
A	25/08/2026	Preliminary Issue	MGP	MGP	MGP

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1 INTRODUCTION

1.1 Background

Wallbridge Gilbert Aztec (WGA) has been engaged by BESIX Watpac to prepare a preliminary stormwater management report for the proposed Murray Bridge Technical College building.

This report is intended to conceptually outline the stormwater design for the proposed development and detail the stormwater management methodology. A final detailed design should be carried out to provide construction documentation and incorporate the stormwater design principles outlined in this report. The final documentation is considered to be beyond the scope of this report.

1.2 Scope of the Assessment

The preparation of the plan comprises the scope of services listed below:

- Site visit.
- Prepare a Stormwater Management Plan detailing the proposed method of collection, treatment and the disposal of site generated stormwater runoff.
- Prepare a preliminary sketch plan showing possible site drainage infrastructure based on the Council's requirements.

1.2.1 Documentation

The client has provided preliminary Architectural plans for the development and an engineering survey.

2 DETAILED REPORT

2.1 Development Description

It is understood the proposed development comprises the construction of a new two storey building, carpark and associated paved landscape areas. Refer to Appendix A for a copy of the preliminary site plans prepared by Swanbury Penglase Architects.

2.2 Catchment Description

The proposed development site is located in the south-west corner of the Murray Bridge High School playing fields. The high school is located at 5 Lohmann Street, Murray Bridge.

The development site is fronted by Swanport Road to the south, existing residential allotments to the west and by the high school's playing fields to the north and east.

The development area is currently covered by turfed playing fields with existing trees along the western and southern boundaries of the development area. Refer to Appendix B for a copy of the current aerial photo.

The existing development site falls approx. 2.0m from the western boundary towards the drainage basin and associated drainage bore located approx. halfway along the southern boundary of the high school grounds.

Below are photos showing the current site conditions.



Photo 1: Looking west along the southern boundary showing the current site conditions.



Photo 2: Looking north showing the current site conditions.

2.3 Existing Stormwater Drainage

A site services review of the existing high school was undertaken by Aurecon. As part of their review a report dated May 2026 was produced and subsequently provided to this office as part of the briefing documents. WGA has used this briefing document as the basis of the stormwater design.

The afore mentioned report states that the entire high school drains via an underground drainage network towards the basin and bore along the southern boundary of the school grounds. The Aurecon reports states that the drainage bore recharges water into the aquifer below at a rate of approx. 1.77 L/sec. Anecdotal evidence from high school staff members states that the bore does drain relatively quickly following a large rain event. It is therefore assumed that if we meet Council's stormwater detention requirements, then the basin and bore are fit to cater for the proposed development.

Further advice from Council states that some of their drainage infrastructure in Swanport Terrace also drains to this basin and bore. In the event that the bore and basin become overloaded, the Council stormwater backs up and overflows underground to the east of the high school.

It should be noted that the proposed development area is turfed playing fields with no known formal drainage system. The surface levels of the playing fields are set such that they surface fall to a central low point, then towards the drainage basin.

Council has provided an excerpt of their flood mapping. This flood mapping shows flooding within the basin itself, some low level flooding beyond the basin, but no flooding of the area within the proposed development site. Refer to Figure 3 for the flood mapping provided.



Photo 3: Council supplied flood map



Photo 4: Showing the existing drainage basin and associated drainage bore.

2.4 Council Requirements

Discussions with David Collins of Murray Bridge Council and subsequent email correspondence, the following outlines the stormwater disposal requirements for this project:

1. Stormwater runoff from the development site is to be no greater than that experienced from the pre-development 10% AEP design storm from the peak 1% AEP design storm event.
2. Council requirement for water quality for large developments is to apply water quality infrastructure before connecting into existing drainage networks. A Music Model showing that Stormwater reduction targets are met as below must also be presented.
 - Retention of litter greater than 50mm for flows up to the 3 month peak flow.
 - 85% reduction in average annual Total Suspended Solid.
 - 80% of load coarse particles 0.5mm or less to be retained.
 - 50% of load fine particles 0.1mm or less to be retained.
 - 45% reduction in average annual Total Phosphorous and Total Nitrogen.
 - No visible oils for flows up to the 3 month ARI peak flow.
3. Council's preference was for the development to discharge direct to the drainage basin and drainage bore within the high school grounds.

Further to the above requirements. DIT have specified that they would like the development meet the climate change requirements for a Shared Socio-economic of SSP 3.70 with a building life of 50 years. Therefore, the final detention requirements will far exceed those required by Council.

2.5 Stormwater Management Methodology

To address Council requirements, a preliminary stormwater management methodology has been prepared for the development and is outlined below.

Based upon the flood mapping provided, is assumed that the existing basin could fill up to RL 33.30 during a 1 in 100 year flood event. The proposed FFL of the building is set at RL 33.90. Therefore, providing adequate freeboard protection of the building in such an event.

The stormwater runoff from the new roof areas will be collected by gutters and downpipes and connected to a sealed underground stormwater system. This sealed system will direct all the roof catchments to 100 kL above ground stormwater detention tanks. The volume of the above ground tanks satisfies Council's stormwater detention requirements.

All paved, hardstand and carpark areas will be collected via a pit and pipe system and directed a 200 kL detention basin. The volume of the detention basin satisfies Councils stormwater detention requirements.

Refer to Appendix D for a copy of the stormwater detention calculations.

In order to meet the stormwater treatment requirements, we propose to adopt a series of water sensitive urban design (WSUD) measures to achieve the outcome. Adopting a series of rain gardens, permeable paving, biofiltration swale, above ground detention and a vegetated stormwater detention basin we achieve the following treatment efficiencies:

- 100 % Retention of litter greater than 50mm is retained on site.
- 95% reduction in average annual Total Suspended Solid.
- Coarse and fine particles are captured and retained on site.
- 79% reduction in average annual Total Phosphorous.
- 54% reduction in average annual Total Nitrogen.
- All catchments where oils can be collected are treated prior to discharge from site.

Refer to Appendix E for a copy of the sketch plan showing the proposed methodology of stormwater collection and disposal.

2.6 Summary

The Preliminary sketch plan contained within this report has been prepared to demonstrate the philosophy behind proposed management of the stormwater runoff from this development. The information provided is preliminary and will be subject to detailed design and documentation.

APPENDIX A

ARCHITECTURAL DRAWINGS



LANDSCAPE LEGEND

EXISTING TREE
TO BE PROTECTED AND RETAINED
REFER TO ARBORIST REPORT

DEMOLISHED TREE

NEW TREE

IRRIGATED GARDEN BED

IRRIGATED GARDEN BED - WSUD

IRRIGATED TURF

CONCRETE PAVEMENT - BEIGE

CONCRETE PAVEMENT - OCHRE

CONCRETE PAVEMENT - BROWN

PERMEABLE PAVING - TRIHEX - BROWN

PERMEABLE PAVING - TRIHEX - BEIGE

SPORTS SURFACING

ASPHALT

COMPACTED SAND

LIMESTONE SLAB 1000L 3000 500H

EXISTING FENCE (1500H)

FENCE TO MATCH EXISTING (1500H)

GATE

GOOD NEIGHBOUR FENCE 2100H

GATE

EWP FACADE ACCESS

EXISTING TREE
TO BE PROTECTED AND RETAINED
REFER TO ARBORIST REPORT

DEMOLISHED TREE

NEW TREE

IRRIGATED GARDEN BED

IRRIGATED GARDEN BED - WSUD

IRRIGATED TURF

CONCRETE PAVEMENT - BEIGE

CONCRETE PAVEMENT - OCHRE

CONCRETE PAVEMENT - BROWN

PERMEABLE PAVING - TRIHEX - BROWN

PERMEABLE PAVING - TRIHEX - BEIGE

SPORTS SURFACING

ASPHALT

COMPACTED SAND

LIMESTONE SLAB 1000L 3000 500H

EXISTING FENCE (1500H)

FENCE TO MATCH EXISTING (1500H)

GATE

GOOD NEIGHBOUR FENCE 2100H

GATE

EWP FACADE ACCESS

EXISTING FENCE (1500H)

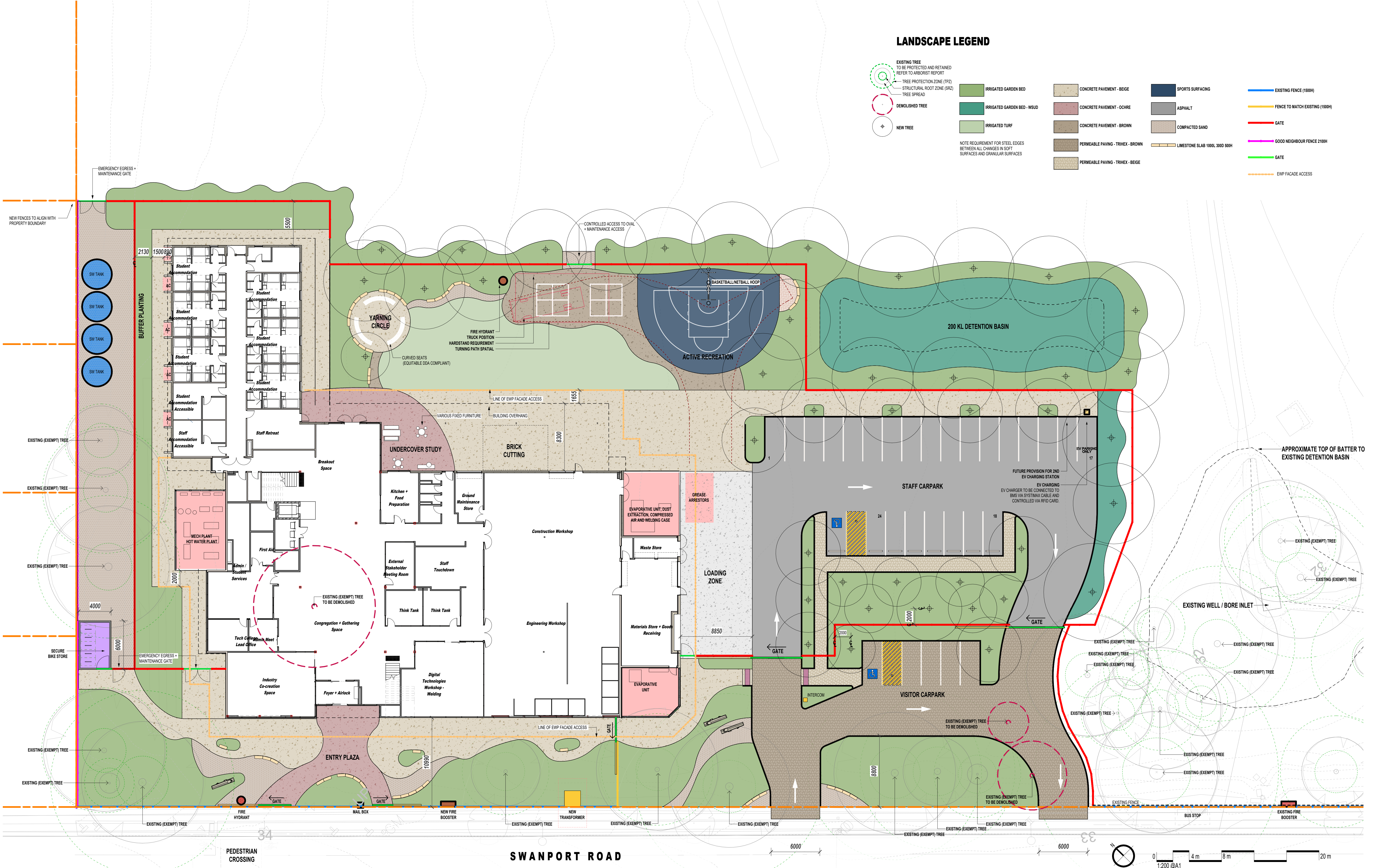
FENCE TO MATCH EXISTING (1500H)

GATE

GOOD NEIGHBOUR FENCE 2100H

GATE

EWP FACADE ACCESS



LANDSCAPE PLAN
MURRAY BRIDGE TECHNICAL COLLEGE
Swanport Road, Murray Bridge

2026.08.20
26101 SK-111 D



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Bridge
TC\LANDSCAPE_lana.g.rvt

APPENDIX B

AERIAL PHOTOGRAPH





APPENDIX C

ENGINEERING SURVEY





STATION LISTING - PLANAR COORDINATES			
STN	EASTING	NORTHING	LEVEL
S001	343703.168	6110477.812	33.875
S100	343551.842	6110640.580	34.063
S101	343641.313	6110549.998	33.108
S102	343788.455	6110629.629	32.384
S103	343751.092	6110637.877	33.777
S200	343534.087	6110644.960	33.689
S301	343892.735	6110487.952	33.868
S302	343919.950	6110821.118	31.394
S303	343778.166	6110368.387	32.945
S304	343717.647	6110869.707	32.965
S400	343735.816	6110676.475	32.888
S401	343600.858	6110554.160	33.595



**ENGINEERING
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REV	DESCRIPTION	STAFF	CHECK	DATE	LEVEL DATUM	AHD
0	FOR INFORMATION	DC	JS	09-07-26	LEVEL AUTHORITY	PSM 6727543 (S301-RL-33.868m)
					CO-ORD DATUM	PLANAR MGA 2020 - ORIGIN AT PSM 6727543 (S301)
					NOTES	

TITLE	FEATURE & LEVEL SURVEY - OVERVIEW MURRAY BRIDGE - HIGH SCHOOL		DATE	09-07-2026	
			SCALE	N.T.S	
CLIENT	DIT: BUILDING PROJECTS DEPARTMENT		SHEET	1 OF 1	
DRAWING	E20260132_Murray-Bridge_High-School_2D_SURVEY_REV0		REVISION	0	SIZE A1

APPENDIX D

STORMWATER CALCULATIONS



1% AEP DETENTION VOLUME - ROOF CATCHMENT

PRE-DEVELOPMENT FLOW

Duration	5 mins
Exceedance per Year (EY)	174 mm/hr

Catchment Area	C	Area (m ²)	
Roof	0.9	0	0.0
Impervious	0.75	0	0.0
Pervious	0.2	2260	21.8
		Total	21.8 L/sec

POST-DEVELOPMENT FLOW

Duration	mins (critical TBC)
Annual Exceedance Probability (AEP)	1% AEP mm/hr

Catchment Area	C	Area (m ²)	
Roof	0.9	2260	0.57
Impervious	0.75	0	0.00
Pervious	0.2	0	0.00
		Total	0.57 1% AEP
			1.59 3.700 SSP factor (50 year building life)
			0.90 1% AEP with Climate change allowance

CRITICAL STORAGE VOLUME

Q in 0.90 1% AEP Q out 21.8 L/sec

Duration (mins)	AEP (mm/hr)	Q in (L/sec)	Q out (L/sec)	V in (L ³)	V out (L ³)	V total (L ³)
5	174	156.3	21.8	46894	6554	40340
10	126	113.2	21.8	67915	9831	58084
15	102	91.6	21.8	82469	13108	69361
20	86.4	77.6	21.8	93141	16385	76756
25	75.8	68.1	21.8	102142	19662	82480
30	67.8	60.9	21.8	109635	22939	86696
45	52.5	47.2	21.8	127341	32770	94571
60	43.5	39.1	21.8	140682	42601	98081
90	33.1	29.7	21.8	160571	62263	98308
120	27.1	24.3	21.8	175286	81925	93361
180	20.3	18.2	21.8	196954	121249	75705
270	15.1	13.6	21.8	219754	180235	39519
360	12.2	11.0	21.8	236733	239221	-2488
540	9.01	8.1	21.8	262250	357193	-94943
720	7.22	6.5	21.8	280199	475165	-194966
1080	5.25	4.7	21.8	305619	711109	-405490
1440	4.17	3.7	21.8	323665	947053	-623388

PEAK STORAGE REQUIRED

98308 L³

1% AEP DETENTION VOLUME - PAVED CATCHMENT

PRE-DEVELOPMENT FLOW

Duration	5 mins
Exceedance per Year (EY)	174 mm/hr

Catchment Area	C	Area (m ²)	
Roof	1	0	0.0
Impervious	0.9	0	0.0
Pervious	0.12	3590	20.8
		Total	20.8 L/sec

POST-DEVELOPMENT FLOW

Duration	mins (critical TBC)
Annual Exceedance Probability (AEP)	1% AEP mm/hr

Catchment Area	C	Area (m ²)	
Roof	1	0	0.00
Impervious	0.9	3590	0.90
Pervious	0.25	0	0.00
		Total	0.90 1% AEP
			1.59 3.700 SSP factor (50 year building life)
			1.43 1% AEP with Climate change allowance

CRITICAL STORAGE VOLUME

Q in

1.43 1% AEP

Q out

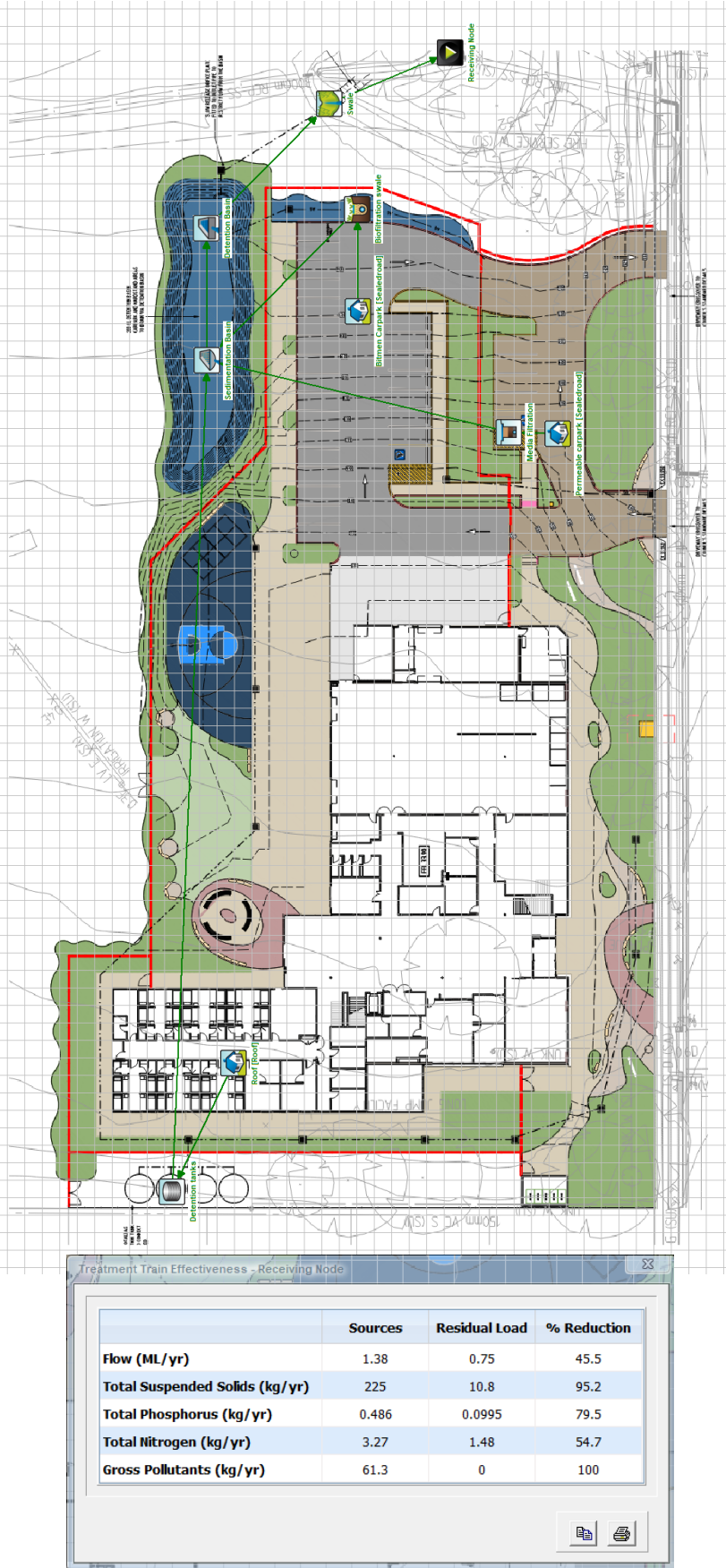
20.8 L/sec

Duration (mins)	AEP (mm/hr)	Q in (L/sec)	Q out (L/sec)	V in (L ³)	V out (L ³)	V total (L ³)
5	174	248.3	20.8	74491	6247	68244
10	126	179.8	20.8	107883	9370	98513
15	102	145.6	20.8	131001	12493	118508
20	86.4	123.3	20.8	147954	15617	132337
25	75.8	108.2	20.8	162253	18740	143513
30	67.8	96.8	20.8	174154	21863	152291
45	52.5	74.9	20.8	202281	31233	171048
60	43.5	62.1	20.8	223472	40603	182869
90	33.1	47.2	20.8	255066	59343	195724
120	27.1	38.7	20.8	278441	78083	200359
180	20.3	29.0	20.8	312861	115562	197299
270	15.1	21.5	20.8	349079	171782	177297
360	12.2	17.4	20.8	376050	228001	148049
540	9.01	12.9	20.8	416583	340440	76143
720	7.22	10.3	20.8	445095	452879	-7784
1080	5.25	7.5	20.8	485474	677756	-192282
1440	4.17	6.0	20.8	514140	902634	-388494

PEAK STORAGE REQUIRED

200359 L³

MUSIC OUTPUT

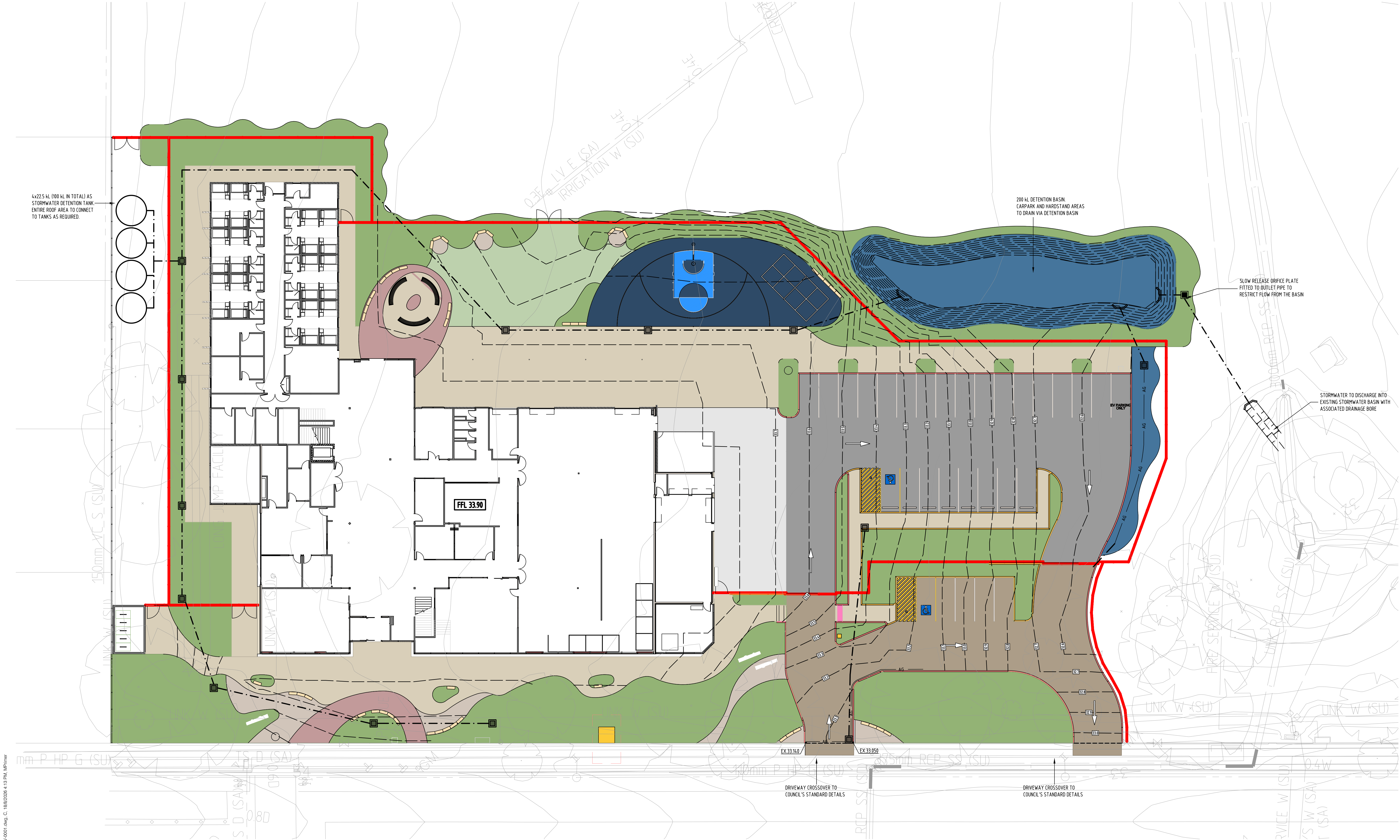


APPENDIX E
PRELIMINARY STORMWATER
SKETCH PLAN



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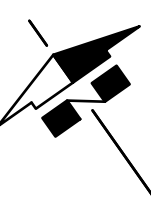


LEGEND:

- EXISTING LEVELS
EXISTING CONTOURS
DESIGN LEVELS
P- PAVEMENT
L- LANDSCAPE
G- GRATE
INV- INVERT
TK- TOP OF KERB
PL- PLATFORM LEVEL
BL- BENCH LEVEL
TW- TOP OF WALL
DESIGN CONTOURS
STORMWATER PIPE - RCP
STORMWATER PIPE - HDPE 'BLACKMAX'
STORMWATER PIPE - PVC
STORMWATER PIPE - 90mm HDPE AG DRAIN
DOWNPIPE CONNECTION
KERB ONLY
KERB & GUTTER
EDGE KERB
SPOON DRAIN
KERB RAMP
GRATED INLET PIT (G.I.)
JUNCTION BOX (J.B.)
STORMWATER INSPECTION OPENING (SIO)
A.C. PAVEMENT
PERMEABLE PAVING
CONCRETE PAVEMENT - LIGHT DUTY
CONCRETE PAVEMENT - LIGHT DUTY
CONCRETE PAVEMENT - LIGHT DUTY
CONCRETE PAVEMENT - LIGHT DUTY
LANDSCAPING (BY ARCHITECT)

NOTES:

- ALL DRAWINGS TO BE READ IN CONJUNCTION WITH THE ARCHITECT'S DRAWINGS, OTHER CONSULTANTS' DRAWINGS & THE SPECIFICATION.
- ALL UPVC STORMWATER PIPES ARE TO BE SEWER CLASS 'SN4'.
- ALL R.C. STORMWATER PIPES ARE TO BE CLASS '4' WITH BEDDING TYPE 'H21' UNO.
- ALL EXISTING SERVICES ARE TO BE LOCATED BY THE CONTRACTOR PRIOR TO COMMENCEMENT OF WORK.
- CONTRACTOR TO CONFIRM INVERTS OF ALL EXISTING PIPES & SUMPS PRIOR TO CONNECTING & LAYING OF ALL NEW PIPEWORK.
- WALL BRIDGE GILBERT AZTEC ARE NOT RESPONSIBLE FOR DIMENSIONAL SET OUT AND THESE DRAWINGS ARE BASED ON BACKGROUNDS PRODUCED BY OTHER PARTIES. WE ACCEPT NO RESPONSIBILITY FOR ERRORS AND OMISSIONS RELATED TO DIMENSIONAL SET-OUT.
- SERVICES INFORMATION SHOWN ON THESE DRAWINGS ARE CONSIDERED TO BE QUALITY LEVEL C, AS PER ASS-08.1. CONTRACTOR TO FAMILIARISE ITSELF WITH THE LIMITATIONS AND ACCURACY OF THIS DATA BASED ON THAT STANDARD.



SCALE BAR (m)
4 2 0 4 8

THIS DRAWING INCLUDES COLOURED INFORMATION
COPIES OF THIS DRAWING MUST BE PRODUCED IN COLOUR

PRELIMINARY ISSUE
NOT FOR CONSTRUCTION

REV.	DATE	DESCRIPTION	DRAFT	ENG.	CHKD
A	11.08.2026	PRELIMINARY ISSUE	MGP	MGP	
B	11.08.2026	PRELIMINARY ISSUE	MGP	MGP	
C	18.08.2026	PRELIMINARY ISSUE	MGP	MGP	

WGA

MURRAY BRIDGE TECHNICAL COLLEGE
5 LOHMANN STREET
MURRAY BRIDGE SA 5253
STORMWATER SKETCH PLAN
B1 DOCUMENT NUMBER
Project Number Sheet No. Rev.
WGA261229-SK-CV-0001 C



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Annexure B3



Murray Bridge Technical College

Planning Stage Acoustic Report

A260487RP1 Revision A

Friday, 28 August 2026



Document Information

Project	Murray Bridge Technical College
Client	Besix Watpac
Report title	Planning Stage Acoustic Report
Project Number	A260487

Revision Table

Report revision	Date	Description	Author	Reviewer
0	14 August 2026	First Issue	Eleanor Tan	Greg Barry
A	28 August 2026	Updated to address comments	Eleanor Tan	Greg Barry

Disclaimer

This report has been prepared by Resonate Consultants Pty Ltd (Resonate) for the exclusive use of our Client. Our advice is not intended for use by any third parties, and any reliance on our advice by third parties shall be entirely at their own risk. Resonate accepts no responsibility or liability for any consequences arising from the use of our advice by persons other than our Client. Our advice has been prepared for the specific purpose and scope agreed with our Client. It is not intended to be a substitute for professional advice in other contexts or to address other issues outside the scope of work for this project.

The information, findings, and recommendations are based on the conditions and data available at the time of preparation. Any opinions or recommendations expressed are subject to the assumptions, limitations, and conditions as stated. Any reliance on external information has been accepted in good faith as being accurate and valid.

Glossary

A-weighting	A spectrum adaption that is applied to measured noise levels to represent human hearing. A-weighted levels are used as human hearing does not respond equally at all frequencies.
Characteristic	Associated with a noise source, means a tonal, impulsive, low frequency, intermittent, or modulating characteristic of the noise that is determined in accordance with the <i>Guidelines for the use of the Environment Protection (Commercial and Industrial Noise) Policy 2023</i> to be fundamental to the nature and impact of the noise.
Continuous noise level	A-weighted noise level of a continuous steady sound that, for the period over which the measurement is taken using fast time weighting, has the same mean square sound pressure as the noise level which varies over time when measured in relation to a noise source and noise-affected premises in accordance with the Noise Policy
Day	Between 7 am and 10 pm as defined in the Noise Policy
dB	Decibel—a unit of measurement used to express sound level. It is based on a logarithmic scale which means a sound that is 3 dB higher has twice as much energy. We typically perceive a 10 dB increase in sound as a doubling of loudness.
dB(A)	Units of the A-weighted sound level.
Frequency (Hz)	The number of times a vibrating object oscillates (moves back and forth) in one second. Fast movements produce high frequency sound (high pitch/tone), but slow movements mean the frequency (pitch/tone) is low. 1 Hz is equal to 1 cycle per second.
Indicative noise level	Indicative noise level determined under clause 5 of the Noise Policy.
L ₉₀	Noise level exceeded for 90 % of the measurement time. The L ₉₀ level is commonly referred to as the background noise level.
L _{eq}	Equivalent Noise Level—Energy averaged noise level over the measurement time.
L _{max}	The maximum instantaneous noise level.
Night	Between 10 pm on one day and 7 am on the following day as defined in the Noise Policy
Noise source	Means a commercial or industrial premises at which an activity is undertaken, or a machine or device is operated, resulting in the emission of noise
Quiet noise designated area	A noise designated area is a quiet noise designated area if the land uses under the Planning and Design Code provisions that make land use rules for the noise designated area are principal land uses that all fall within either or both of the following land use categories (a) Residential; (b) Rural Living.

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1 Introduction

This report outlines the environmental noise assessment for the proposed Technical College within the grounds of the existing Murray Bridge High School, at 5 Lohmann St., Murray Bridge, SA 5253. The project involves the construction of a technical college, with attached accommodation, associated car-parking facilities, and the installation of all accompanying mechanical plant.

The noise impact assessment has been undertaken in consideration of the following:

- Planning & Design Code
- *Environment Protection (Commercial & Industrial Noise) Policy 2023* (Noise Policy)
- World Health Organization (WHO) *Guidelines for Community Noise*

Acoustic modelling was performed based on information obtained from the following reference documents.

- Murray Bridge Technical College Return Brief - Rev 1_20260616.pdf & appendices
- 26101 - Combined DA Set for Review 2026.08.24.pdf
- LCE106305 Concept Acoustic Markup_ACONEX.pdf
- LCE106305 Exhaust Discharge Memorandum.pdf.

2 Proposed development

2.1 Location

The preferred subject site is located in the western corner of the existing Murray Bridge High School site, between Swanport Road & Lohmann Street. The site is within a residential zone, surrounded by residential receptors, with the exception of a small commercial zone located 21 m west of the site. The proposed site abuts the residential properties on Best St along the northern border.

Table 1 Nearby premises around the subject site

Direction	Distance from site ⁽¹⁾	Premises
North	< 5m	Residential premises abutting site along Best Street
Northeast	220m	Residential premises on Lohman Street
Southeast	250m	Residential premises on Long Island Road
South	30m	Residential premises on Swanport Road
West	20m	Commercial premises on corner of Swanport Road & Homburg Street

(1) The distance represents the approximate minimum distance from the subject site boundary to the nearest boundary of the adjacencies.

Figure 1 shows an aerial image of the site in relation to adjacent land and zoning.



Figure 1 Aerial image of site, adjacent land, and zoning

2.2 Operation

The facility is proposed to be used for industry training programs for careers in manufacturing, engineering, & construction, for students across years 10 - 12. Reflecting an industrial workspace for students, it will feature a large workshops section, with associated industry standard equipment.

It is proposed to be in operation between 7.00am until 6.00pm, having a capacity for 250 part-time students and 25 staff.

Table 2 Proposed activity

Noise sources	Location	Period	
		Day—7 am to 10 pm	Night—10 pm to 7 am
General operations			
Workshop operations	Southeastern wing of building	Assumed internal noise level of L_p 95 dB(A). Hearing protection required.	No nighttime operation
Building services plant			
Condensers Evaporation cooling units Heat exchangers Relief / extraction / outside air fans	Plant areas along western and eastern façades. Extraction fans appropriately positioned according to their respective purpose	Operating at 100% capacity	Accommodation condensers only.
Vehicle movements			
Car park activity	Access from Swanport Road.	20 car movements per 15-minute period	5 car movements per 15-minute period
Loading dock activity	Access from Swanport Road, bay east of workshop	1 delivery with MRV per 15-minute period. Electric forklift unloading	No nighttime deliveries
People noise			
Outdoor recreation	Northeast of main building	Active recreation area - 50 people	No nighttime activity

3 Existing noise environment

Environmental noise measurements were carried out on Tuesday 14th August 2026 between 6:30 am and 08:30 am to capture the existing noise environment at the subject site and adjacent land uses.

3.1 Methodology

Attended measurements were taken with a Brüel & Kjær 2250 Class 1 sound level meter, serial number 2749881, calibration was carried out before & after the measurements, with no calibration drift observed. The sound level meter and calibrator carry current calibration certificates from a NATA accredited laboratory. Copies of the calibration certificates are available on request.

Noise measurements were undertaken in accordance with the following:

- Noise measurements were undertaken during a period of 2 hours under representative traffic conditions.
- The microphone of the sound level meter was at a height of approximately 1.2 metres above the ground and at least 3.5 metres away from any wall or facade.
- The axis of maximum sensitivity of the microphone of the sound level meter was directed towards the noise source.
- A windshield was used during all measurements.
- Measurements were undertaken during a calm, still day (for which the wind velocity did not exceed 5 m/s).

Measurement locations are depicted in Figure 2.



Figure 2 Attended measurement locations

3.2 Attended measurements

Attended measurements were taken in three locations, for periods of 5 to 15 minutes to characterise the typical local noise environment during the monitoring periods (including both day time and night time periods as defined in the Noise Policy). Table 3 shows these measurements on 11 August 2026.

Table 3 Attended measurements of subject site on 11/08/2026

Location	Time start	L _{Aeq}	L _{Amax}	L _{A90}	L _{A10}	Measurement Notes
L1	06:31	67	93	50	70	Bird sound dominant during lulls in traffic.
L2	06:51	69	84	53	73	Traffic numbers increasing up and more frequent. Activity from Fuel Station audible when during lulls in traffic.
L3	07:30	69	81	56	74	Traffic noise controlled.
L1	07:51	71	82	60	75	Traffic dominating (including school bus) with pedestrian activity
L2	07:56	69	83	58	73	Continuous traffic noise and pedestrian activity at the traffic lights
L1	08:21	69	78	59	73	Continuous traffic noise and pedestrian activity at the traffic lights

4 Planning & Design Code

4.1 Zoning

The subject site and most of the noise-sensitive receivers are located within the Suburban Neighbourhood residential zone. A small Local Activity commercial zone is located 21 m west of the subject site.

The Desired Outcomes, Performance Outcomes, and Designated Performance Features of the zones/subzones have been used by the EPA in their *Indicative Noise Factor Guidelines* to determine appropriate land use categories and indicative noise factors used to derive environmental noise criteria (refer to Section 5.1 for further details).

4.2 Interface between land uses

Interface between Land Uses is a General Development Policy that is relevant to the subject site. The relevant Assessment Provisions relating to noise are outlined in Table 4.

Table 4 Relevant Assessment Provisions—Activities generating noise or vibration

Relevant Assessment Provisions	
Desired Outcome	
DO1	Development is located and designed to mitigate adverse effects on or from neighbouring and proximate land uses.
Performance Outcome	Deemed-to-Satisfy Criteria / Designated Performance Feature
PO 4.1 Development that emits noise (other than music) does not unreasonably impact the amenity of sensitive receivers (or lawfully approved sensitive receivers).	DTS/DPF 4.1 Noise that affects sensitive receivers achieves the relevant Environment Protection (Commercial and Industrial Noise) Policy criteria.

Relevant Assessment Provisions	
PO 4.2 Areas for the on-site manoeuvring of service and delivery vehicles, plant and equipment, outdoor work spaces (and the like) are designed and sited to not unreasonably impact the amenity of adjacent sensitive receivers (or lawfully approved sensitive receivers) and zones primarily intended to accommodate sensitive receivers due to noise and vibration by adopting techniques including: a) locating openings of buildings and associated services away from the interface with the adjacent sensitive receivers and zones primarily intended to accommodate sensitive receivers b) when sited outdoors, locating such areas as far as practicable from adjacent sensitive receivers and zones primarily intended to accommodate sensitive receivers c) housing plant and equipment within an enclosed structure or acoustic enclosure d) providing a suitable acoustic barrier between the plant and / or equipment and the adjacent sensitive receiver boundary or zone.	DTS/DPF 4.2 None are applicable.
PO 4.4 External noise into bedrooms is minimised by separating or shielding these rooms from service equipment areas and fixed noise sources located on the same or an adjoining allotment.	DTS/DPF 4.4 Adjacent land is used for residential purposes.

5 Noise criteria

5.1 Environmental noise policy

As noted in DTS/DPF 4.1, environmental noise emissions from the subject site should comply with the *Environment Protection (Commercial & Industrial Noise) Policy 2023* (Noise Policy).

As noted in Section 4.1, the environmental noise criteria are based on the land use categories determined based on the principal land uses outlined in the Planning & Design Code for the noise source and noise-affected premises. The land uses and indicative noise factors are as shown in Table 5.

Table 5 Excerpt from Noise Policy—Table 2(subclause(1)(b))

Land use category	Indicative noise factor dB(A)	
	Day (7 am to 10 pm)	Night (10 pm to 7 am)
Rural living	47	40
Residential	52	45
Rural industry	57	50
Light industry	57	50
Commercial	62	55
General industry	65	55
Special industry	70	60

Based on the land use categories as outlined in the EPA's *Indicative Noise Factor Guidelines*, the relevant criteria for the noise-affected premises in each zone are as outlined in Table 6. In accordance with Part 5 of the Noise Policy, the relevant criteria are the average of the relevant indicative noise factors less 5 dB(A).

Table 6 Summary of zones, land uses, and Noise Policy criteria

Site	Zone/subzone	Land use categories	Criteria, dB(A)		
			Day L _{Aeq} (7 am to 10 pm)	Night L _{Aeq} (10 pm to 7 am)	* Night L _{Amax} (10 pm to 7 am)
Subject site	Suburban Neighbourhood	Residential	N/A	N/A	N/A
Premises surrounding subject site – Best Steet, Swanport Road, Lohmann Street, & Long Island Road	Suburban Neighbourhood	Residential	47	40	60 ⁽¹⁾
Premises to the west - Corner of Homburg Drive & Swanport Roads	Local Activity Centre	Commercial	52	45	N/A

- (1) An additional maximum noise criterion of L_{max} 60 dB(A) at night, 10 pm to 7 am is applicable as the noise affected premises is situated in a residential land use category, which is a 'quiet noise designated area'.

5.2 Schools, kindergartens, child-care centre of place of worship

It should be noted that the Noise Policy specifically excludes 'noise from activities carried on in the ordinary course of the operation of a school, kindergarten, child-care centre of place of worship'. The *Guidelines for the use of the Environment Protection (Commercial and Industrial Noise) Policy 2023* (the Guidelines) further notes that:

Child-care centres, schools, kindergartens, places of worships and playgrounds are often located immediately adjacent to sensitive land uses. Activities carried on in the 'ordinary course' of the operation normally include people noise (such as noise from school activities) and worship activities (such as music and church bells). However, other noise sources that can be assessed under the noise policy from these areas are mechanical noise sources that may be utilised on site (such as noise from an air conditioner plants, or pumps).

As such, we recommend that noise from mechanical plant be assessed under the Noise Policy, while noise from students is assessed separately in accordance with the World Health Organization (WHO) *Guidelines for Community Noise*.¹ The Guidelines note that the Noise Policy indicative noise levels are 'underpinned by the recommendations in the World Health Organization (WHO) guidelines', and so adoption of the WHO criteria is appropriate and aligns with the intent of the Noise Policy requirements.

5.3 WHO Guidelines for Community Noise

As discussed above, the WHO Guidelines can be used to consider the noise generated by students. It states the following with respect to noise annoyance during the daytime for outdoor areas of residences:

¹ Guidelines for Community Noise, World Health Organization, Geneva. Published April 1999.

To protect the majority of people from being seriously annoyed during the daytime, the sound pressure level on balconies, terraces and outdoor living areas should not exceed 55 dB L_{Aeq} for a steady continuous noise. To protect the majority of people from being moderately annoyed during the daytime, the outdoor sound pressure level should not exceed 50 dB L_{Aeq} .

Based on the above, we recommend that the average noise level in the outdoor areas at the closest noise sensitive premises be no greater than 50 dB(A) $L_{Aeq,16h}$. Achievement of this external noise criterion will also result in the relevant WHO indoor noise criteria (35 dB(A) $L_{Aeq,16h}$) being achieved in residences with open windows.

5.4 Noise characteristics

Under the Noise Policy, noise that exhibits annoying characteristics attracts a penalty to account for such noise being more noticeable and annoying when compared to constant, broadband or steady noise. For a penalty to be applied, the characteristic must dominate the overall noise impact at the receiver, rather than being part of it.

These characteristics are considered in the assessment of the predicted noise levels at the receivers. Refer to Section 6 for further information.

5.5 Emergency equipment

Specification of emergency equipment in this development has yet to be confirmed. Typical emergency equipment may include standby generators and onsite fire pumps. The following information is therefore general in nature. Typically, the strict application of the Noise Policy criteria during periodic testing or emergency situations are considered to be too onerous.

The *Guidelines for the use of the Environment Protection (Commercial & Industrial Noise) Policy 2023* (the Guidelines) provides guidance on reasonable adjustments for noise sources that are intermittent and infrequent. Table 7 outlines the allowable adjustment of the criteria for intermittent and infrequent noise sources. Note that the compliance criterion is 5 dB higher than the criteria outlined in Table 6.

Table 7 Allowable adjustment of the criteria

Allowable duration of noise (1 event in a 24-hour period)	Allowable exceedance of the compliance criterion (INL), dB(A)	
	Day (7 am to 10 pm)	Night (10 pm to 7 am)
Under 2 hours	3	0
Under 1 hour	5	0
Under 15 minutes	10	3

For the fire protection equipment, typical operation is typical:

- Tested monthly for up to 15 minutes
- Tested during daytime only
- During emergency (fire).

The criteria as outlined in Table 8 has been adopted for emergency equipment based on the above and the associated rationale.

Table 8 Emergency equipment criteria & rationale

Equipment	Design criterion, L _{eq} dB(A)	Rationale
Fire pump, Smoke Spill Fans, Stair Pressurisation Fans, Stair Pressurisation Relief fans	Day INL +10	Testing of the fire pump will only occur during the daytime period, once a month, for a 15-minute period. The nighttime criterion will be exceeded when the fire pump is in operation; however, this will be in the event of a fire when noise emissions and protection of amenity is not typically considered to be the priority.

5.6 Waste collection

The *Local Nuisance and Litter Control Act 2016* (LNLC Act) provides a means to assess noise from waste collection at a commercial premises.

The requirements for under the LNLC Act for this source are outlined in Table 9.

Table 9 Requirements of the LNLC Act

Description	Example noise sources	Nuisance trigger
Waste collection	Waste collection	If it is considered that that the noise has travelled from the place at which it was generated to neighbouring premises: - before 9am or after 7pm on any Sunday or public holiday; or - after 7pm or before 7am on any other day.

With respect to noise, the LNLC Act was written to utilise subjective compliance assessments and therefore does not include any specific noise goals.

We note that the LNLC Act is used to assess whether an existing noise source constitutes a local nuisance. It is not intended to be used during the planning stage. However, the LNLC Act requirements regarding noise associated with waste collection are to provide a restriction on the hours on when the waste collection activities to be occurred once the development is operational and should be considered at the planning stage.

6 Assessment

6.1 Noise modelling

6.1.1 Modelling parameters

Modelling was undertaken in SoundPLAN Environmental Software v9.1 program, using the ISO 9613-2:1996 algorithm.

This method predicts sound pressure levels under meteorological conditions favourable to propagation from noise sources. These conditions are for downwind propagation, or, equivalently, propagation under a well-developed moderate groundbased temperature inversion, such as that which commonly occurs at night.

Specific terms are provided in the algorithm for the following physical effects:

- geometrical divergence
- atmospheric absorption
- ground effect
- reflection from surfaces
- screening by obstacles.

6.1.2 Modelling scenarios

Modelling scenarios aligned with the operations as outlined in Section 2.2 are presented in Table 10.

Table 10 Modelling scenarios

Scenarios	Activity	Criteria
Day—7 am to 10pm		
General activity (day time)	• Workshop operations • Building services plant • Vehicle Movements • Outdoor recreation	Noise Policy day WHO guidelines
Night—10pm to 7 am		
General activity (nighttime)	• Building services plant – reduced • Vehicle movements - Nighttime	Noise Policy night

6.2 Sound levels

Sound levels adopted in the noise modelling of the proposed development are outlined in Table 11.

Table 11 Sound levels

Location	Details	Quantity	Sound level	Notes
Northeren Plant area	Small condenser (8 kW)	4	L _w 60 dB(A)	1,2
	Medium condenser (16 kW)	5	L _w 80 dB(A)	1,2
	A2W Heat Pump	2	L _w 87 dB(A)	1,2
Northern Façade	Small condensers (8 kW)	10	L _w 58 dB(A)	1,2
	Small Exhaust fan	2	L _w 60 dB(A)	1
Eastern façade	Small Exhaust fan	1	L _w 60 dB(A)	1
	Medium exhaust fan	1	L _w 73 dB(A)	1
Southern Façade	Small exhaust fan	1	L _w 60 dB(A)	1
Carpark & Loading Area	Staf Carpark - Passenger vehicle movements	Day time: 15 Night time: 5	L _w 81 dB(A)	3
	Visitor carpark - Passenger vehicle movements	Daytime: 5 Night time: 0	L _w 74 dB(A)	3
	Vehicle starting – L _{max} event	1	L _w 98 dB(A)	
	Small Bus	1 movement	L _w 83 dB(A) engine L _w 75 dB(A) exhaust	3
	Delivery Truck	1 movement	L _w 99 dB(A) moving slowly L _w 90 dB(A) idling	3
	Electric forklift	1	L _w 82 dB(A)	1
Workshop	Internal sound level	—	L _p 95 dB(A) L ₁₀	1
	Rooftop - Exhaust Fan	2	L _w 92 dB(A)	1

Location	Details	Quantity	Sound level	Notes
	Façade exhaust fan	1	L _w 60 dB(A)	1
Southern plant Areas	Evaporative cooler	2	L _w 89 dB(A)	1,2
	Dust extractor	1	Radiated L _w 84 dB(A)	1,2
	Air compressor	1	L _w 84 dB(A)	1,2
Northeastern Grounds	Active recreation area	50 students	L _w 76 dB(A) per person	3
	Brick cutting wet saw	1	L _w 105 dB(A)	1

- (1) Resonate database of measured and researched data.
 (2) Provided by the Mechanical Engineer.
 (3) Association of Australasian Acoustical Consultants Guideline for Child Care Centre Acoustic Assessment V3.

6.3 Predicted noise levels

6.3.1 General activity

A summary of the predicted noise levels at noise-affected premises is presented in Table 12 and Table 13 for day and night time emissions respectively. Presented sound levels consider recommendations shown in APPENDIX A.

Table 12 Predicted noise levels—day

Prediction location	Predicted noise level, L _{eq} dB(A)	Noise Policy day time criteria, dB(A)
Premises to the North along Best Street	≤ 47	47
Premises to the Southwest along Swanport Road	≤ 47	47
Commercial premises to the West	≤ 47	52
Premises to the East along Lohmann Street	≤ 39	47
Premises to the South along Thespian Court	≤ 37	47

Table 13 Predicted noise levels—night

Prediction location	Predicted noise level, L _{eq} dB(A)	Noise Policy nighttime criteria, dB(A)
Premises to the North along Best Street	≤ 37	40
Premises to the Southwest along Swanport Road	≤ 20	40
Commercial premises to the West		45
Premises to the East along Lohmann Street		40
Premises to the South along Thespian Court		40

Additionally, maximum noise levels are expected to be less than 60 dB(A).

6.3.2 Application of characteristic penalties

No characteristic penalties have been applied to the noise sources in this assessment. This is on the basis that:

- Mechanical services plant will operate continuously over a 15 minute period (refer to the control of the dust extraction filter purge requirements in Section 6.4) and are expected to be broadband noise sources.
- Car parking and deliveries will be similar in character to the existing road traffic.
- The outdoor brick cutting is likely to have an intermittent character but, in accordance with the Noise Policy, this character is only applicable during the night time period.

6.3.3 Summary

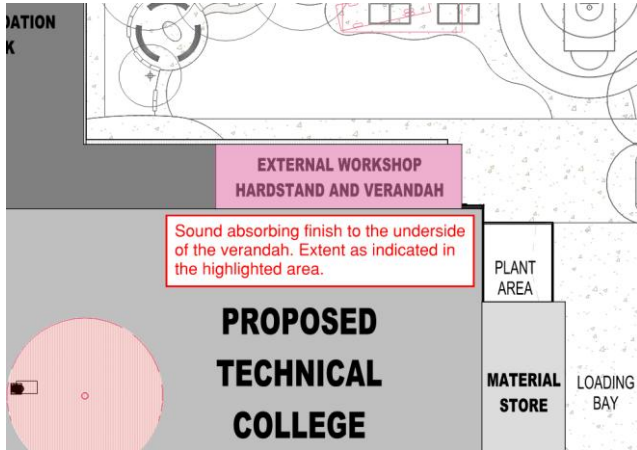
The predicted indicative noise levels comply with the Noise Policy criteria based on:

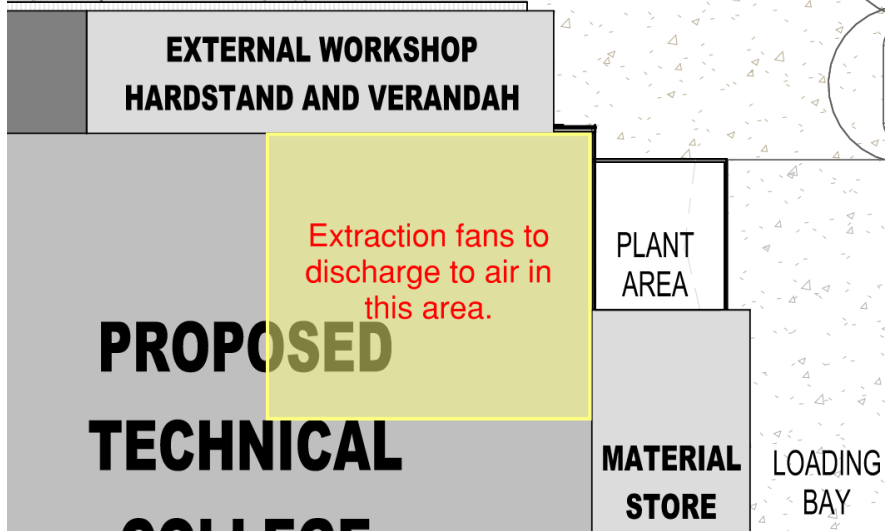
- proposed scenarios as outlined in Section 2.2, and
- treatments as outlined in Section 6.4.

6.4 Treatments

At this current stage of project, the mechanical design is still in development; notwithstanding our assessment has assumed the following noise control measures are included to achieve compliance with the noise criteria set out in Section 5. The noise control measures are shown in Table 14, however, are subject to change as the design develops.

Table 14 Recommended treatments

Area	Minimum recommendations or acoustically equivalent
Workshop area	- Roof/ceiling: - Metal deck roofing 75 mm, 14kg/m³ insulation 1 x 13 mm standard plasterboard ceiling - External walls: - Metal deck wall cladding 92 mm steel stud framing 75 mm, 14kg/m³ insulation 13 mm thick impact rated plasterboard (10.5. kg/m²) - Glazing: - Minimum 10.38 mm laminate glass in aluminium frames (R_w 36) - Roller doors - Shut when machining equipment is in use - Constructed from materials providing minimum R_w 15 - External undercover brick cutting area - Ceiling to be sound absorbing finish with minimum NRC 0.9. as shown below. A suitable product is 50mm Pyrotek Reapor  The diagram is a site plan for the 'PROPOSED TECHNICAL COLLEGE'. It shows several areas: 'EXTERNAL WORKSHOP HARDSTAND AND VERANDAH' (highlighted in pink), 'PLANT AREA', 'MATERIAL STORE', and 'LOADING BAY'. A red box with text points to the underside of the verandah, stating: 'Sound absorbing finish to the underside of the verandah. Extent as indicated in the highlighted area.' The workshop area is also highlighted in pink. The plan includes various architectural details like walls, doors, and equipment footprints.

Area	Minimum recommendations or acoustically equivalent
Mechanical Plant	Plant areas (general) - Plant areas to be enclosed on the sides (open on top for air circulation) with a solid barrier constructed from 0.48 BMT steel. - Barrier to extend minimum 1 m above the top of the plant. ECU.02 duct: - Discharge duct to be lined with minimum 3m of 50 mm 32kg/m³ insulation. Dust extraction system: - To be fitted with all noise attenuating accessories including: - FM1000 DUAL Silencer - FM1000 Noise Enclosure. - Filter purge to occur no more than once per day and between 9 am – 5 pm. Roof mounted air extract fans: - Discharge location for fans to be as shown below:  - Discharge terminal to be oriented away from residential premises - Provide in line attenuators (this assessment has assumed attenuators with insertion loss similar to Fantech N2T20C.

7 Conclusion

An environmental noise impact assessment has been undertaken for the proposed Technical College within the grounds of the existing Murray Bridge High School, at 5 Lohmann St., Murray Bridge, SA 5253.

This assessment has demonstrated that, with the indicative noise mitigation treatments detailed in this report the noise emissions from the operation of the proposed development will be able to comply with the relevant policy and code requirements including:

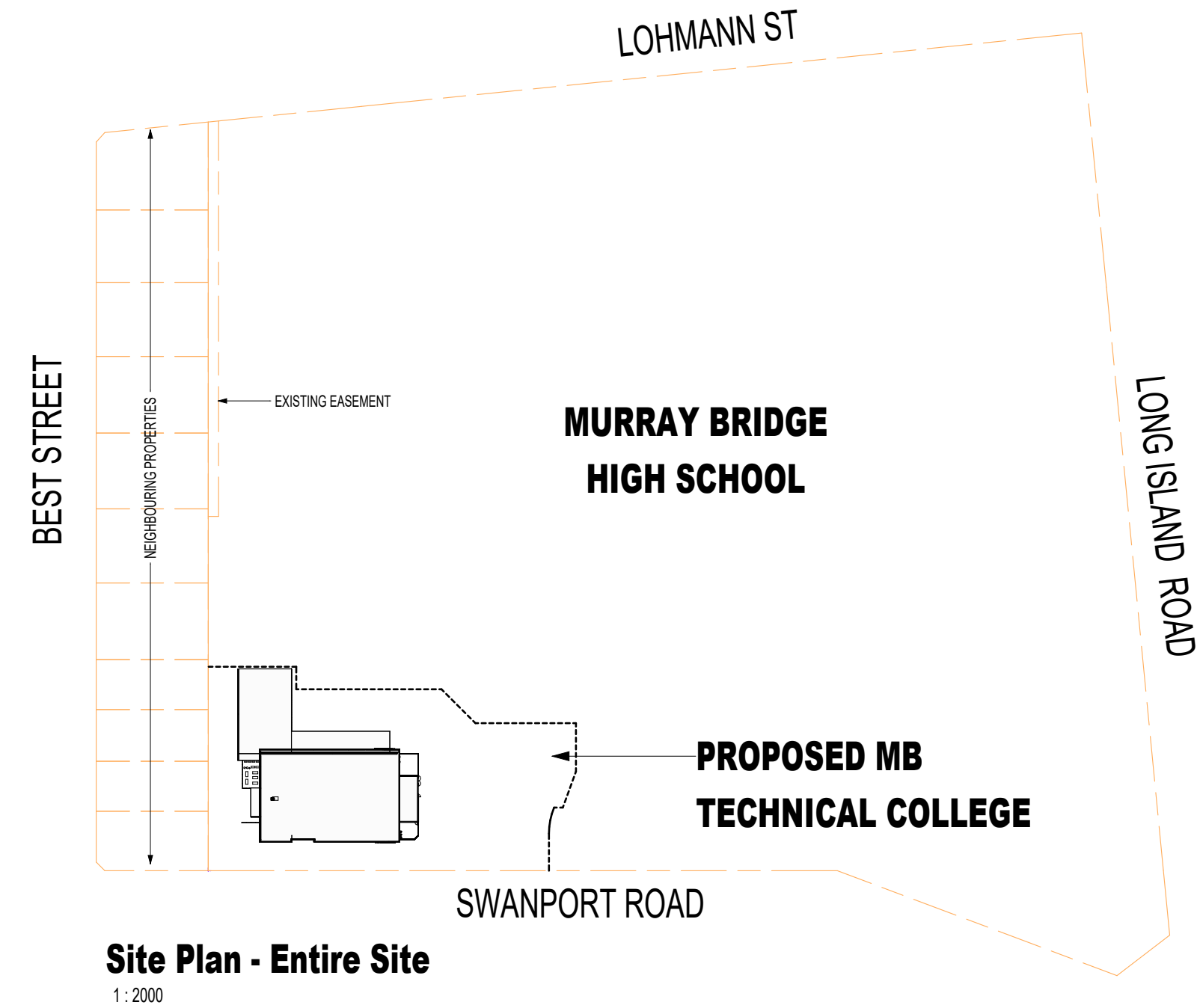
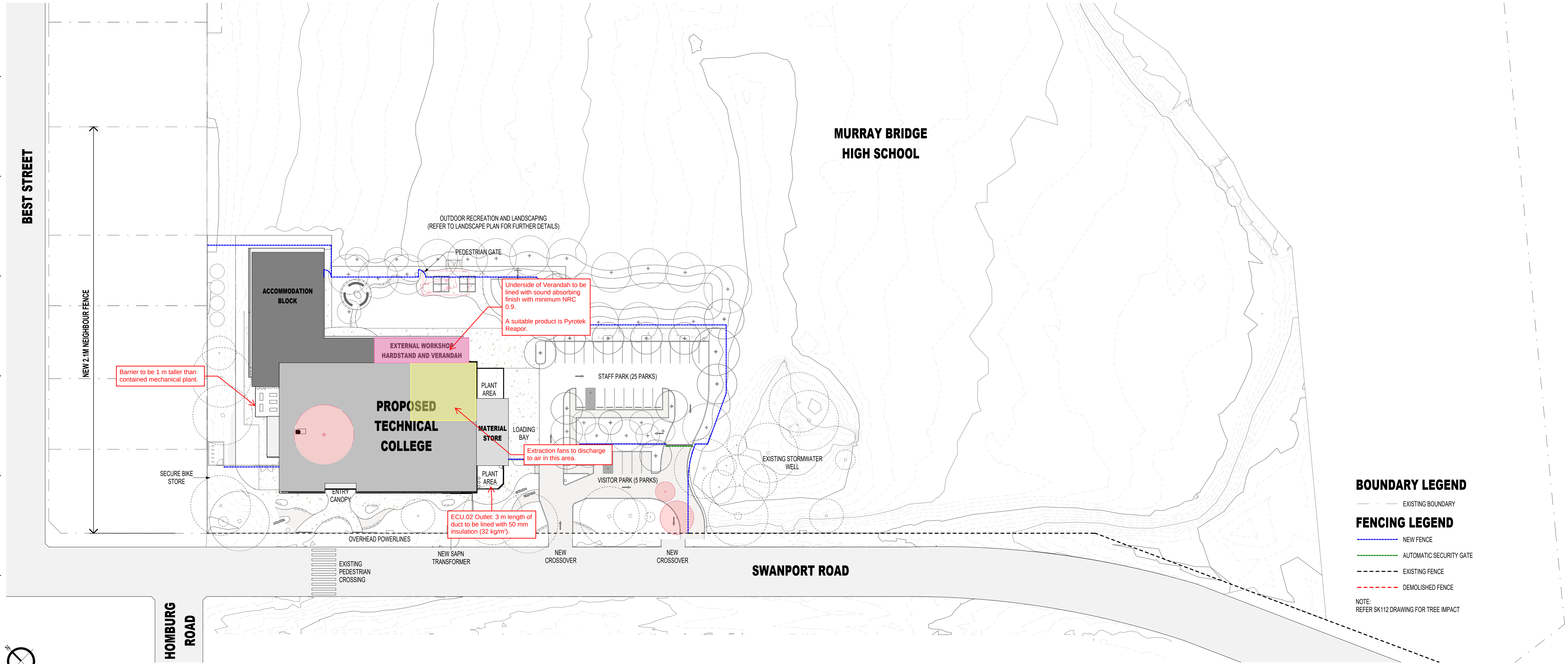
- Planning & Design Code
- *Environment Protection (Commercial & Industrial Noise) Policy 2023* (Noise Policy)
- World Health Organization (WHO) *Guidelines for Community Noise*.

All recommended treatments will be further reviewed and refined during the detailed design of the development, and as such, all recommendations provided within the report are to be considered as indicative only. Notwithstanding, this report demonstrates that the operational Technical College can achieve the relevant environmental noise requirements using conventional construction methods.



Appendix A

1:1 WHEN PRINTED @A1



- BOUNDARY LEGEND**
- EXISTING BOUNDARY
- FENCING LEGEND**
- NEW FENCE
 - AUTOMATIC SECURITY GATE
 - EXISTING FENCE
 - DEMOLISHED FENCE
- NOTE:
REFER SK112 DRAWING FOR TREE IMPACT

Annexure B4

Exhaust Discharge Memorandum

To: Besix Watpac Date: 11/08/2026

Attention: Ben Collette

From: James Zoanetti

Project: Murray Bridge Technical College

The following memorandum provides a summary of the air quality assessment for the Murray Bridge Technical College as part of the SCAP review. It identifies potential sources of external air pollution and outlines the steps that will be taken to exhaust them in compliance with relevant codes, in order to minimise risk to those in the surrounding area.

Relevant Codes and Standards

The following codes, standards and technical resources have been considered in the determination of exhaust requirements:

- National Construction Code 2022
- AS 1668.2 – Use of Ventilation and Air Conditioning in Buildings
- AS 4745 – Code of Practice for Air Handling Combustible Ducts
- AS 60079 – Explosive Atmospheres – Classification of Areas
- Department for Education Design Standards for Education Facilities
- MBTC Equipment List dated 14 July

Accommodation Area Contamination Sources

- Toilets and Showers

The toilet and shower areas are proposed to be exhausted in accordance with AS 1668.2 quantities via ceiling mounted grilles. Exhaust discharge will be via either roof mounted cowls or weatherproof façade louvres, with minimum separation distances from outside air intakes or natural ventilation openings to be maintained.

Workshop Areas Contamination Sources

The following areas and plant within the workshop have been identified as requiring mechanical exhaust in accordance with the NCC and AS 1668.2.

- Welding Bays
- CNC Plasma Cutter
- Timber Cutting Zone
- Flammable and Corrosive Liquid Storage Cabinets

Welding Bays

The welding bays are proposed to be served by individual proprietary extraction arms or hoods connected to a central exhaust system. Welding fumes are considered within AS 1668.2 to be a Type A effluent, requiring the following to maintain a compliant discharge:



- Be arranged vertically with discharge velocities not less than 5 m/s.
- Be situated at least 3m above the roof, except in the case of a pitched roof, at least 1m above the ridge.
- Above any part of the building (or adjacent buildings) that is within 15m (horizontally) of the discharge point.
- Located not less than 6m from a property boundary, boundary to a public street, outdoor air intake or natural ventilation opening.

The welding bay exhaust will therefore require vertically arranged stacks that rise above the height of the adjacent Level 2 of the main building. Minimum 6m separation will be provided from any outside air intake, natural ventilation opening or the boundary of the workshop.

Additionally, capture velocity of the exhaust system will be a minimum of 10m/s in accordance with DIT Technical Standards.

CNC Plasma Cutter

The CNC Plasma Cutter is proposed to be served by a dedicated local exhaust system with hood situated directly above the machine. It is understood that the plasma cutter will incorporate a water table as opposed to a downdraft style ventilation system as per the equipment list and as such the local exhaust will provide secondary exhaust ventilation.

The plasma cutter discharge will be considered as a Type A effluent under AS 1668.2 and as such will require a vertically arranged stack above the height of the adjacent Level 2 of the main building, with a minimum separation of 6m from any outside air intake, natural ventilation opening or boundary.

Timber Cutting Zone

The timber cutting areas are proposed to be served by a proprietary dust extraction system, incorporating local exhaust to equipment from a centralised fan, filter and dust collector. The dust collector, filtration and fan system are proposed to be located within the North Eastern plant area, with central access to the construction workshop.

The proprietary system will be required to comply with AS 4745 requirements for combustible dusts. The discharge of the system is considered clean air, although will be arranged to discharge vertically at a minimum height of roof level.

Chemical Storage Cabinets

Corrosive and flammable liquid storage cabinets are required to be vented directly to atmosphere in accordance with DIT Education and Care Facilities Design Standards Technical Specifications. Fumes from these enclosures are considered within AS 1668.2 to be Type A effluent and as such will need to adhere to the discharge requirements.

Ventilation to these cabinets will be provided by UPVC ductwork directly to atmosphere above, terminating 3m above roof level in accordance with AS 1668.2.

General Learning Areas Contamination Sources

The following areas within the main building have been identified as requiring mechanical exhaust in accordance with the NCC and AS 1668.2.

- Toilet/Amenities Spaces
- Cleaners Rooms
- Laundry Room
- Kitchen/Food Prep
- Store Rooms



Ventilation to general learning areas will generally be provided by heat recovery ventilation units. It is noted that exhaust discharge from these units is not considered to be objectionable, although adequate separation from intakes will be provided where possible.

Toilet/Amenities, Cleaners, Laundry, Store Room Exhaust Systems

Amenities, cleaners, laundry and store rooms will be provided with exhaust ventilation quantities in accordance with AS 1668.2 via ceiling mounted grilles. Discharges from these systems will generally be via roof mounted cowls or weatherproof louvres within the façade. Minimum separation distances from outside air intakes or natural ventilation openings will be maintained in accordance with AS 1668.2.

In some instances there may be an opportunity to recover heat from toilet exhaust systems to temper incoming outside air. In these situations, sensible only heat recovery media will be utilised to ensure separation between toilet exhaust and outside air streams.

Kitchen/Food Prep

The kitchen/food prep cooktop is proposed to be served by a proprietary kitchen exhaust rangehood, discharging horizontally via a weatherproof louvre in the façade. It is understood that this is an induction type hob and does not have an input exceeding 8kW as per the equipment list. This system is therefore not considered to be objectionable and can discharge horizontally with minimum separation distances maintained in accordance with AS 1668.2.

The pass through dishwasher is proposed to be served by a general local exhaust directly over the unit. It is understood that the dishwasher is a pass through type with heat recovery and as such releases minimal steam and does not require dedicated extraction. The general exhaust is proposed to discharge horizontally via a weatherproof louvre in the façade with minimum separation distances maintained in accordance with AS 1668.2.

Summary

General learning and accommodation areas requiring mechanical exhaust ventilation in accordance with AS 1668.2 will be provided with dedicated systems and will generally discharge via roof mounted cowls or weatherproof louvres within the façade. Discharges for these systems will be located to provide minimal ductwork runs while maintaining minimum separation distances from outside air intakes and natural ventilation openings to maintain adequate indoor air quality.

Exhaust systems within the workshop areas extracting Type A effluent fumes will be discharged vertically at a minimum height in accordance with AS 1668.2. Discharges will be located to provide consolidated stacks where possible, while minimising ductwork runs. Minimum separation of 6m will be provided from discharges to any outside air intakes, natural ventilation openings or boundaries of the building, with greater distances achieved where possible to minimise the risk of occupant exposure.

Refer to Appendix A for proposed locations of exhaust systems associated minimum separation requirements.

Regards,

Lucid

James Zoanetti
Associate

Ground Floor - Concept Design

1:100

ACCOMMODATION AREA TOILET EXHAUST RISER TO ROOF MOUNTED COIL, MAINTAIN 6m CLEARANCE FROM POTENTIAL OUTSIDE AIR INTAKE LOCATION ON FACADE.

TOILET EXHAUST DISCHARGE AT FACADE.

COMBINED EXHAUST DISCHARGE SERVING KITCHEN RANGEHOOD, GENERAL EXHAUST AND TOILET EXHAUST SYSTEMS MAINTAINING MINIMUM 6m SEPARATION FROM POTENTIAL NATURAL VENTILATION OPENING.

EVAPORATIVE COOLING UNIT PROPOSED LOCATION. MINIMUM 6m CLEARANCE TO BE MAINTAINED BETWEEN EVAPORATIVE COOLING UNIT AND ANY EXHAUST DISCHARGES.

PROPOSED LOCATION OF WOODWORKING WORKSHOP DUST EXTRACTION SYSTEM INCORPORATING FAN, FILTER AND DUST COLLECTION BIN. EXHAUST TO DISCHARGE VERTICALLY OUT OF EXTRACTOR UNIT.

EXHAUST DISCHARGE FOR STORE ROOM. MAINTAINING MINIMUM 6m CLEARANCE FROM EVAPORATIVE COOLING UNIT OUTSIDE AIR INTAKE.

EVAPORATIVE COOLING UNIT PROPOSED LOCATION. MINIMUM 6m CLEARANCE TO BE MAINTAINED BETWEEN EVAPORATIVE COOLING UNIT AND ANY EXHAUST DISCHARGES.

PLASMA CUTTER EXHAUST DUCTWORK STACK TO RISE THE GREATER OF 3m ABOVE WORKSHOP ROOF LINE, OR ABOVE ADJACENT BUILDING ROOF LINE AS IT IS WITHIN 15m.

WELDING BAT EXHAUST DUCTWORK STACK TO RISE THE GREATER OF 3m ABOVE WORKSHOP ROOF LINE, OR ABOVE ADJACENT BUILDING ROOF LINE AS IT IS WITHIN 15m.

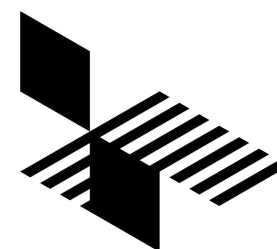
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CHEMICAL STORAGE CABINETS VENT PIPEWORK. STACK TO RISE THE GREATER OF 3m ABOVE WORKSHOP ROOF LINE.

WELDING BAY EXHAUST DUCTWORK. STACK TO RISE THE GREATER OF 3m ABOVE WORKSHOP ROOF LINE, OR ABOVE ADJACENT BUILDING ROOF LINE AS IT IS WITHIN 15m.

PLASMA CUTTER EXHAUST DUCTWORK. STACK TO RISE THE GREATER OF 3m ABOVE WORKSHOP ROOF LINE, OR ABOVE ADJACENT BUILDING ROOF LINE AS IT IS WITHIN 15m.



Annexure B5

Department for Education

Murray Bridge Technical College

Sustainability Report

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Our Vision is to **think beyond the square**.

Our Mission is to help shape spaces, communities, and organisations, that are positive for people and the environment. We will do this by providing our clients with sustainable and bespoke solutions that are innovative, challenge perceived ideas, and push the boundaries of achievement and excellence.

We confirm that all work has been undertaken in accordance with our ISO 9001 accredited quality management system.

Acknowledgement of Country

The dsquared team wish to acknowledge the Traditional Custodians of Country throughout Australia. In the spirit of reconciliation, we recognise their continuing cultural, spiritual, physical and emotional connection to land, waters and community. We pay our respects to Elders both past and present.

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1 Introduction

1.1 Introduction

This document summarises the sustainability initiatives which will be applied to the new Murray Bridge Technical College (MBTC), in order to reduce its impact on the environment in both construction and operation.

The report is based on the 30% Concept Design report and drawings with additional recommendations and opportunities to be further developed during the detailed design stage.

1.2 Design guiding principles

The sustainability approach has been aligned with overall design brief Design Guiding Principles which are summarised below (refer Figure 1). This includes ensuring that the project integrates:

- Best practice approaches to sustainability to support MBTC as a Beacon of Excellence.
- Opportunities for the facility to demonstrate sustainability outcomes as a Learning on Display outcome.
- Designing the facility to be Flexible and Adaptable which can support improved sustainability outcomes by ensuring the facility can adapt and be reused over time.



Beacon of Excellence



Feels like a Workplace



Learning on Display



Flexible and Adaptable

Figure 1: Design guiding principles

The Design Guiding Principles will continue to be used to review sustainability approaches throughout design development.

1.3 Sustainability strategies

Ecologically sustainable development (ESD) principles and strategies have been incorporated to improve climate resilience and reduce energy and greenhouse gas (GHG) emissions over the life of the building. The principles and strategies have been developed in line with the Department for Education (DfE) Education and Care Facilities Design Standards and Department for Infrastructure and Transport (DIT) ESD – Planning, Design, Delivery, and Sustainment of Government Buildings (G44) guide note.

The ESD strategies and initiatives have been developed with the following specific focus areas (refer Figure 2):

Topic	Summary
 Climate change resilience	The design responds and adapts to a changing climate to ensure the building is safe and resilient now and in the future.
 Embodied emissions	Materials and products are selected to reduce embodied emissions by preferring recycled content and lower emissions manufacturing.
 Energy	An all-electric, energy efficient design powered by South Australia's leading renewable energy generation and onsite renewable energy where feasible.
 Water	Water efficient services with drought tolerant landscaping and plantings to reduce potable water use. Alternative non-potable water sources incorporated where feasible.
 Circular economy & waste	Waste is reduced during construction and operations with strategies to avoid, reduce, reuse, and recycle materials. Circular economy opportunities are supported by preferring local suppliers that reuse and remanufacture products and materials.
 Indoor environment quality & wellbeing	Indoor environments provide good quality indoor air, acoustic performance, comfortable temperatures, daylight and views to the outdoors, and reduced glare.
 Equity & inclusion	Spaces are designed to be welcoming, inclusive and accessible for students and staff with universal design principles integrated.
 Sustainable transport	Sustainable transport options are supported including bicycle racks and electric vehicle (EV) charging provisions to support the future transition to EVs.

Figure 2: ESD strategies

dsquared will work with the design team to integrate sustainability into all aspects of the building design. This includes initial building simulation to inform façade design and building services selection, to optimise the energy efficiency of the project, and embodied carbon calculations to inform the design and selection of materials for a low carbon facility.

1.4 Author

This report has been prepared Jacob Potter, an Associate of consultancy firm dsquared.

Jacob is an Associate with 15 years' experience in energy, resource and carbon management in both the public and private sector. Jacob specialises in strategic sustainability advisory services, focussed on climate change adaptation and resilience, decarbonising the built environment and driving the net zero emissions transition.

Jacob was previously in the Department for Education's Infrastructure Division and has extensive experience in sustainable design and operations for education facilities.

2 Performance

2.1 Key Performance Indicators

The following sustainability performance indicators apply to the project. These indicators act as a mechanism to guide the design through future stages and ensure a suitable sustainability standard is achieved.

Item	Proposed Performance Target
Energy	10% less energy than a code compliant reference building.
Thermal comfort	Thermal comfort performance in line with Green Star and Section J standards – i.e. Predicted Mean Vote +/- 1.0 for >98% of occupied hours in all occupied zones.
Embodied emissions	30% reduction in Portland cement via incorporating Supplementary Cementitious Material (SCM) such as flyash or blast furnace slag (pending confirmation of local concrete supplier capabilities and program impacts).
Waste	Minimum 90% of construction and demolition waste diverted from landfill Minimum landfill, co-mingled recycling, and organics provisions and space for specialist waste streams for operational waste in line with DfE requirements.
Transport	Minimum of 11 secure bicycle parking spaces for staff and student use. EV changing infrastructure to NCC minimum requirements with a EV charging station incorporated in the

2.2 Energy

A preliminary target has been set to reduce energy use by 10% compared to a NCC reference building which will be demonstrated via building simulation modelling. The current approach to achieve this target is for the building to be all-electric and thermally efficient via appropriate insulation and glazing specifications. The incorporation of a rooftop solar PV system will increase

The energy improvement will be confirmed during design development as part of building simulation reporting including confirmation of the integration of the rooftop solar PV system size.

2.3 Building envelope

The façade is required to achieve a combination of thermal performance, air-tightness, daylight provision, and glare control requirements.

An initial review of the building has been undertaken against the NCC Section J requirements. The table below summarises the key building fabric performance criteria.

Building Fabric Element	Performance Requirement
Envelope Walls	Provide 90mm R2.5 insulation batt within stud cavity. Brick Veneer / Cladding to be separated from stud with an air cavity, top hat or equivalent thermal break.
Spandrels	Provide insulated back-pan to achieve total-system performance of R1.4.
Roofs	Provide 145mm R3.6 bulk insulation blanket at roof level, fixed within a purlin spacer system to ensure insulation is not compressed.

Building Fabric Element	Performance Requirement
	Roof sheeting to be of light colour with a solar absorptance < 0.45 and three-year SRI of minimum 64 (Colorbond Surfmist or equivalent).
Glazing	<u>Typical Double Glazing:</u> U-Value: 3.6 W/m ² SHGC: 0.35 (maximum) VLT: 50% (minimum) <u>Glazed Doors:</u> U-Value: 5.2 W/m ² SHGC: 0.45 (maximum) VLT: 50% (minimum) <u>Student Accommodation Glazing:</u> U-Value: 3.0 W/m ² SHGC: 0.35 (maximum) VLT: 50% (minimum)

As a minimum NCC Section J Deeded to Satisfy (DTS) provisions will be met. A performance solution (J1V3) is likely to be required to achieve Section J compliance, given the increased visual clarity requirements for the workshops and increased thermal performance requirements for the accommodation / crash pad spaces. This approach will be explored further in the subsequent design stages.

2.4 Embodied emissions

The building is aiming to achieve a minimum 30% Portland cement reduction for concrete via the use of Supplementary Cementitious Material (SCM) such as flyash or blast furnace slag. This will depend on the availability of local concrete suppliers that can incorporate SCM in mixes and any impacts on program.

Additional embodied carbon reductions will be achieved through a combination of efficient structural design, materials replacement with sustainable alternatives, and considering a dematerialised approach to fitout elements.

2.5 Sustainability checklist

A sustainability checklist has been developed for the project to ensure sustainability outcomes are considered during the design and construction phase of the project. The focus of the checklist is on achieving strong ESD outcomes rather than a formal sustainability certification such as Green Star.

The sustainability checklist has been workshopped with the DfE and DIT and will be updated throughout design development to monitor and report on sustainability outcomes.

3 Sustainability initiatives

3.1 Introduction

The following section summarises the ESD and sustainability initiatives incorporated in the design and incorporate minimum DfE and DIT requirements. Throughout the project workshops will continue to be held with DfE and the design team to ensure ESD initiatives are targeted in accordance with the DfE and DIT standards and guide notes.

3.2 Climate change resilience

The following initiatives are being integrated into the design to improve climate change resilience:

- The design is incorporating climate change projections including increased temperatures and hot days, increased rainfall intensity and reduced average annual rainfall to ensure the building adapts to and is resilient to climate change.
- Lighter coloured finishes will be preferred to reduce urban heat including roofs and outdoor materials (paving and surfaces).
- Stormwater modelling will include peak flows including climate change projections to reduce risks associated with increased rainfall intensity and site flooding.

3.3 Embodied emissions

To reduce embodied emissions the following initiatives are being integrated into the design:

- High embodied emissions materials such as concrete and steel are being reviewed to reduce emissions. Opportunities to incorporate recycled content in the concrete and structure will be reviewed based on local supplier capabilities and cost.
- Internal fitouts are aiming to leave services exposed, reducing material use, associated embodied emissions, and enabling ease of repair, maintenance, and disassembly.
- Opportunities to incorporate recycled content in materials and fitout product selections will be investigated during design development.

3.4 Energy

Energy efficiency is a priority for the design to reduce energy consumption and costs with the following integrated:

- The building will be all-electric for base building services with high coefficient of performance (COP) selections. Any gas requirements for workshops will be from bottled if required.
- Rooftop solar PV will be maximised to support the all-electric design based on the operational load of the facility.
- Visualisation of energy and solar PV generation data is being incorporated for learning on display opportunities.
- Passive design approaches have been incorporated including building orientation, shading, and overhangs to reduce energy use.
- Efficient HVAC system selections with energy recovery ventilators (ERV) and a Building Management System (BMS) incorporated to increase fresh air provisions and reduce energy use.

- Improved thermal performance for insulation and glazing selections where cost effective and providing an operational and thermal comfort benefit.
- LED lighting with automatic sensors and timers as per DfE design standards.

3.5 Water

Water efficiency will be maximised to reduce potable water use, and the following initiatives are being incorporated into the design:

- Water efficient fixtures and fittings will be specified in line with the DfE design standards.
- Rainwater storage is being investigated to reduce peak stormwater flows and enable non-potable water use for irrigation.
- Drought tolerant and low water use plants are being considered as part of landscape designs while incorporating a First Nations cultural overlay and co-design approach.
- Hot water will be provided from air to water heat pumps with a high COPs and electric hot water storage.

3.6 Circular economy & waste

The following initiatives are being incorporated to reduce the use of resources, support a circular economy approach, and reduce waste to landfill:

- Operational waste will include minimum provisions for landfill, co-mingled recycling, and organics, as well as space for specialist waste streams and recycling from the workshop.
- Construction and demolition (C&D) waste will aim for a 90% diversion rate.
- Opportunities to incorporate recycled content from local suppliers will be investigated during design development e.g., sourcing flyash from Port Augusta.
- Opportunities to dematerialise and use materials that can be disassembled and reused / recycled at end of life will be considered during design development.

3.7 Indoor environment quality & wellbeing

Indoor environment quality initiatives considered in the design include:

- Acoustic performance requirements developed in line with DfE design standards including reverberation, maximum noise levels, and acoustic separation.
- Daylight and views to the outdoors have been incorporated with external shading to reduce direct sunlight and consideration of glare.
- Low VOC and formaldehyde internal finishes will be selected to improve indoor air quality.
- Fresh air provisions will be reviewed including CO₂ demand-controlled ventilation for occupied spaces.

3.8 Equity & inclusion

The following initiatives are being incorporated to improve inclusive design outcomes:

- Breakout, staff retreat and congregation and gathering spaces have been incorporated to provide communal social areas.
- High quality and welcoming spaces are being incorporated for overnight accommodation / crash pads.
- A First Nations cultural overlay and co-design approach has been adopted as part of design development.
- Universal design principles have been adopted in line with the DfE design standards.

3.9 Sustainable transport

The following sustainable transport initiatives are being incorporated into the design:

- A minimum 11 secure bicycle racks to support active commutes for staff and students.
- Electric vehicle charging infrastructure (electrical capacity and conduits) have been incorporated for future EV charging stations and one EV charging station allowed for.

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